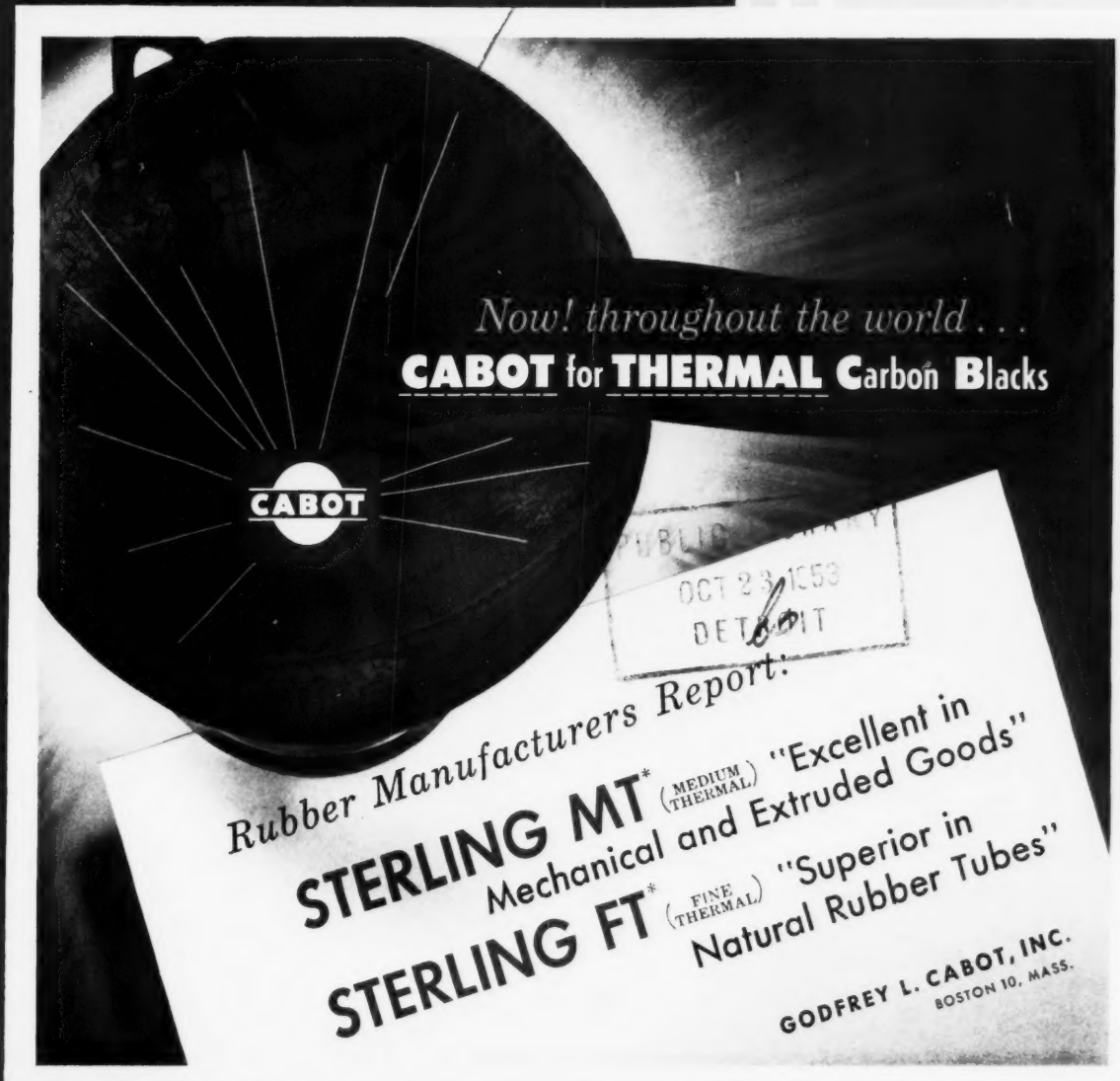
INDIA RUBBER WORLD

OUR 65th YEAR

A BILL BROTHERS PUBLICATION

OCTOBER, 1953

Now! throughout the world . . .
CABOT for THERMAL Carbon Blacks
CABOT
Rubber Manufacturers Report:
STERLING MT* (MEDIUM THERMAL) "Excellent in Mechanical and Extruded Goods"
STERLING FT* (FINE THERMAL) "Superior in Natural Rubber Tubes"
GODFREY L. CABOT, INC.
BOSTON 10, MASS.

B V.129 Oct. 1953-Nov. 1954

Du Pont Announces . . .

RPA No. 6

a new peptizing agent for natural rubber and all types of GR-S

PROPERTIES

Appearance: A light, gray powder
Specific Gravity: 1.72
Storage Stability: Good

RECOMMENDED QUANTITIES

For use in rubber: 0.05—0.2%
For use in GR-S: 0.5—2.0%

CHECK THESE ADVANTAGES OF DU PONT RPA NO. 6:

- √ High degree of activity over a wide range of temperatures (212°F to 350°F).
- √ Short breakdown times.
- √ Particularly effective in oil-extended GR-S, as well as in both "hot" and "cold" types and natural rubber.
- √ Elastomers which have been plasticized with RPA No. 6 show excellent stability with little change in plasticity during normal storage.
- √ Effective in both Banbury and open-mill mastication.

YOU CAN GET additional information on new Du Pont RPA No. 6 from your Du Pont representative. He'll be glad to discuss its use with you and show you data on laboratory and factory evaluations of this highly effective peptizing agent. Why not get in touch with him today at the Du Pont office nearest you?

DISTRICT OFFICES:

Akron 8, Ohio, 40 E. Buchtel Ave.....HEmlock 3161
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DU PONT RUBBER CHEMICALS

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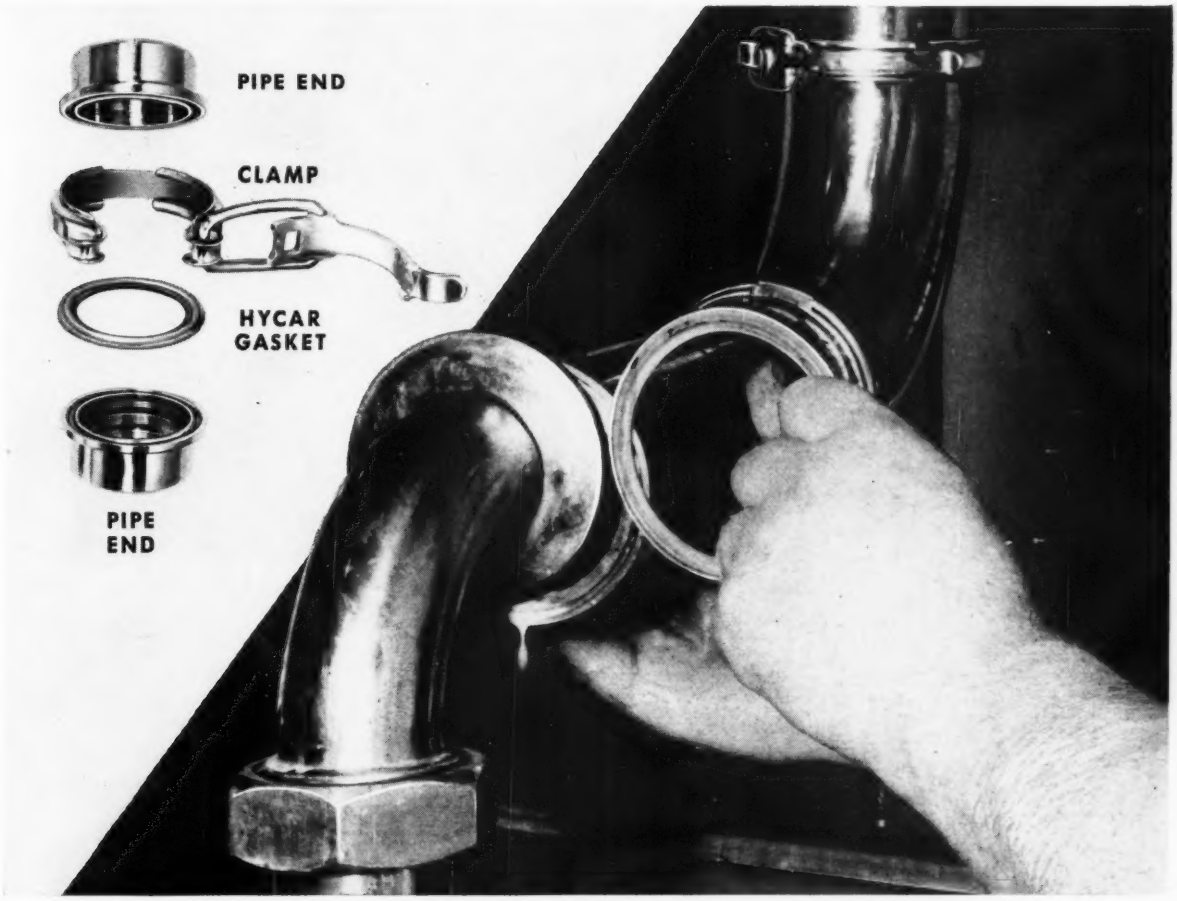
BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

India Rubber World, October, 1953, Vol. 129, No. 1. Published monthly by Bill Brothers Publishing Corp. Office of Publication, 1309 Noble Street, Philadelphia, Pa., with Editorial and Executive Offices at 386 Fourth Avenue, New York 16, N. Y., U.S.A. Entered as Second Class Matter at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription United States and Mexico, $5.00 per year; Canada $6.00; All other Countries $7.00; Single Copies 50 cents. Address Mail to N. Y. Office.

Another new development using

B. F. Goodrich Chemical *raw materials*



Tri-clamp fitting manufactured by Tri-Clover Machine Co., Kenosha, Wisconsin. B. F. Goodrich Chemical Company supplies the Hycar rubber only.

MILK PIPE SANITATION HELPED BY HYCAR GASKET

EVERYBODY knows that handling milk demands the utmost in sanitation, and one of the problems is the daily cleaning and flushing of milk pipelines. It's a job that involves high labor cost and lost time when the lines must be disassembled, cleaned and flushed after each production run.

"Cleaned-in-place" pipeline systems are making a radical cut in labor costs. CIP lines, using the specially designed clamp pictured here, can cut labor costs as much as 60 per cent. The clamp contains a gasket made from Hycar rubber that effectively seals the pipe joints; the lines may be cleaned simply by flushing, without disassembly. Compounded to be non-toxic, the Hycar gasket neither contaminates the milk, nor deteriorates in alkaline or acidic cleaning fluids.

Versatile Hycar rubber compounds are used in many ways, in many industries. Hycar resists oil, grease, many chemicals and abrasion, and is not affected by extreme pressures or temperatures. Nor will Hycar distort or cold flow. If these advantages point a way for Hycar to help you improve or develop a product, we'll help you with technical advice. For information, please write Department HA-10, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

B. F. Goodrich Chemical Company
A Division of The B. F. Goodrich Company

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Reg. U.S. Pat. Off.
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GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON colors

Rubber troubles? Feeling blue?
The **Philblacks*** *know just what to do!*

All Worn Out? Philblack E adds up to 42% more abrasion resistance to synthetic rubber tire treads. Works wonders in making rubber tougher, longer-wearing. Excellent cut and crack growth resistance, too.

Run Down? Philblack O and Philblack E keep rubber vitally youthful . . . give remarkably long flex life.

Listless? Philblack I, the new ISAF black (Intermediate Super Abrasion Furnace) is prescribed for tread stocks that need a tonic. Gives unusually high abrasion qualities at moderate added cost.

Jumpy Nerve? *Fever?* Philblack A removes nerve; makes processing easy. Reduces heat build-up. Gives accurate moldings and smooth, fast tubings.

The Philblacks can help keep your business healthy. For full information consult our technical sales representative.

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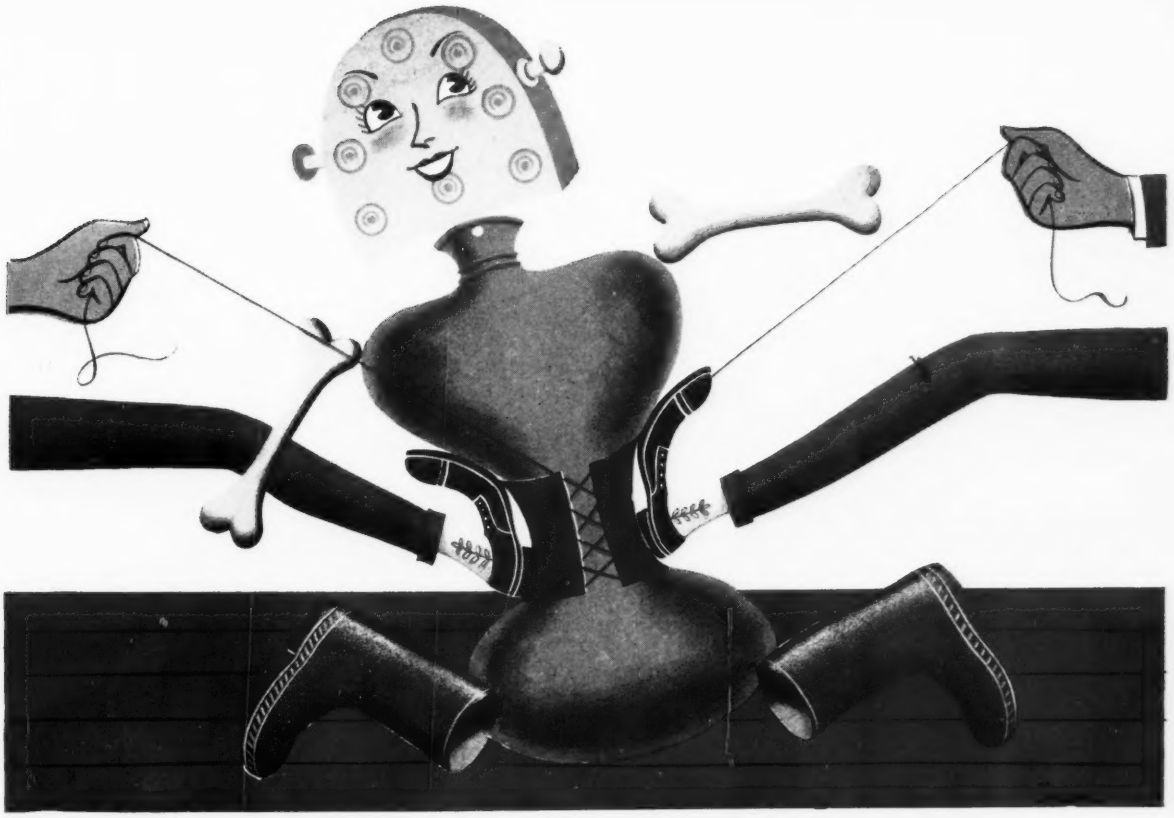
The Philblacks are manufactured at Borger, Texas. Warehouses in Akron, Boston, Chicago, and Trenton. West Coast agent: Harwick Standard Chemical Company, Los Angeles. Canadian agent: H. L. Blachford, Ltd., Montreal and Toronto.

Make rubber tight...*fast!*



with *TUEX* and *ETHYL TUEX*

For an unusually fast, tight cure, you'll find no accelerators quite like Naugatuck's Tuex and Ethyl Tuex.

These proven rubber chemicals may be used in all natural and synthetic rubbers—as primary accelerators with or without sulfur, or as activators for other accelerators.

They make possible high modulus and very good tensile strength—ideal for natural rubber wire insulation, drug sundries, mechanicals, footwear, and proofed goods of all kinds.

Both Tuex and Ethyl Tuex are non-discoloring and non-staining to rubber stocks and materials in contact with them. They have excellent storage stability, are fast dispersing, and require no handling precautions.

Tuex is a grayish white powder with a melting point of not less than 135°C. Ethyl Tuex, a yellow powder, melts from 71° to 73°C. Both have low cure temperatures and are relatively non-scorching and non-persistent.

Find out more about Tuex and Ethyl Tuex by sending the coupon below.

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Naugatuck Chemical, 1310 Elm St., Naugatuck, Conn.
Please send free technical data on Tuex and Ethyl Tuex to:

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Title.....
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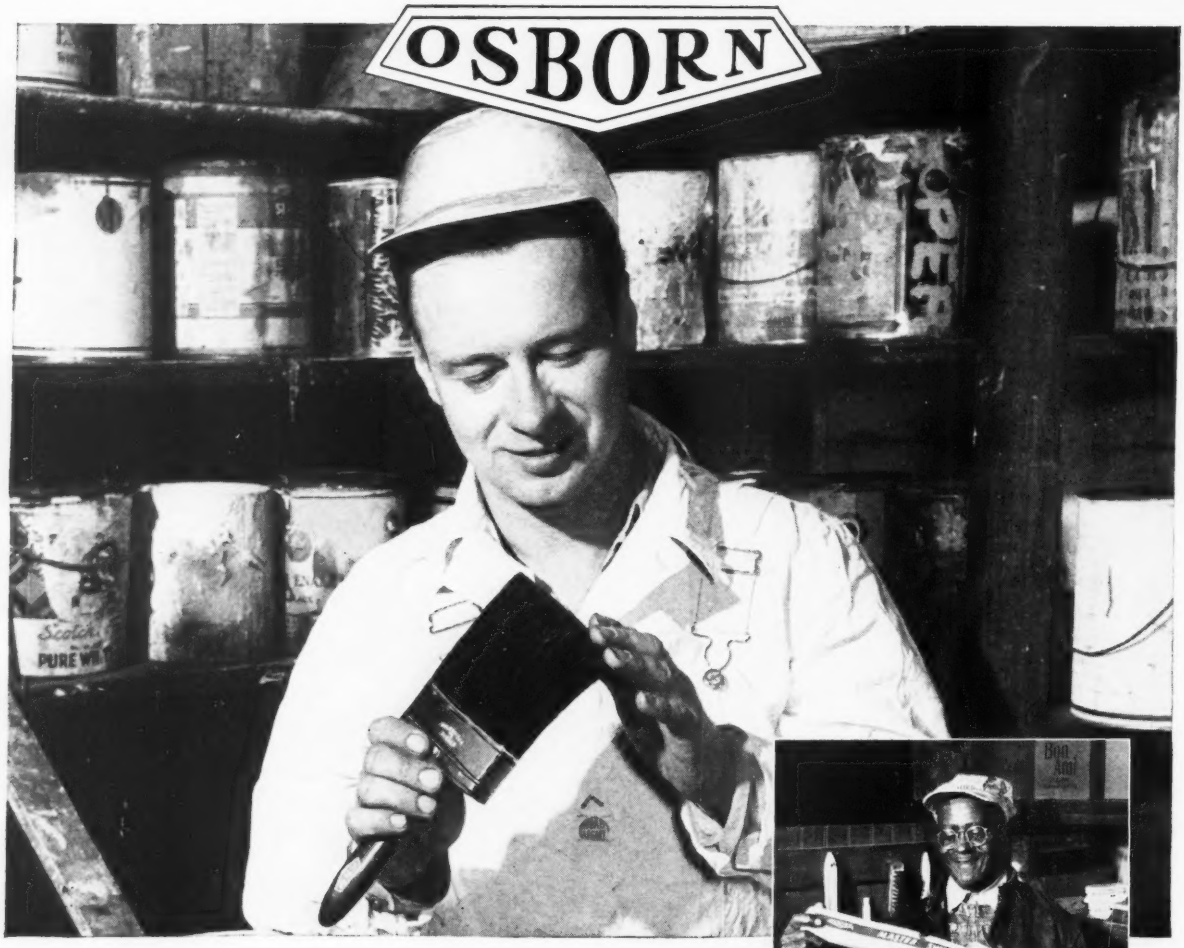
OSBORN



He can show you how to save time and money

THE man who uses brushes in his daily work knows the best when he sees it . . . he just looks for the name "OSBORN". His quick "OK" can be your clue to important savings in purchasing time and cost. All you need to do is put the name "OSBORN" on your order cards. Then buying is *quick* and *sure*. No need for shopping around. No risk of sacrificing quality.

You can buy OSBORN Brushes *automatically* with confidence because their workmanship and materials are backed by 61 years of OSBORN service to Industry. Accepted as the standard of quality by purchasing agents today, Osborn Brushes are stocked by leading Industrial Distributors in your area. *The Osborn Manufacturing Company, Dept. CC-4, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

HANDY CATALOG. Simplifies specifying of Osborn maintenance and paint brushes. Write for your free copy today.

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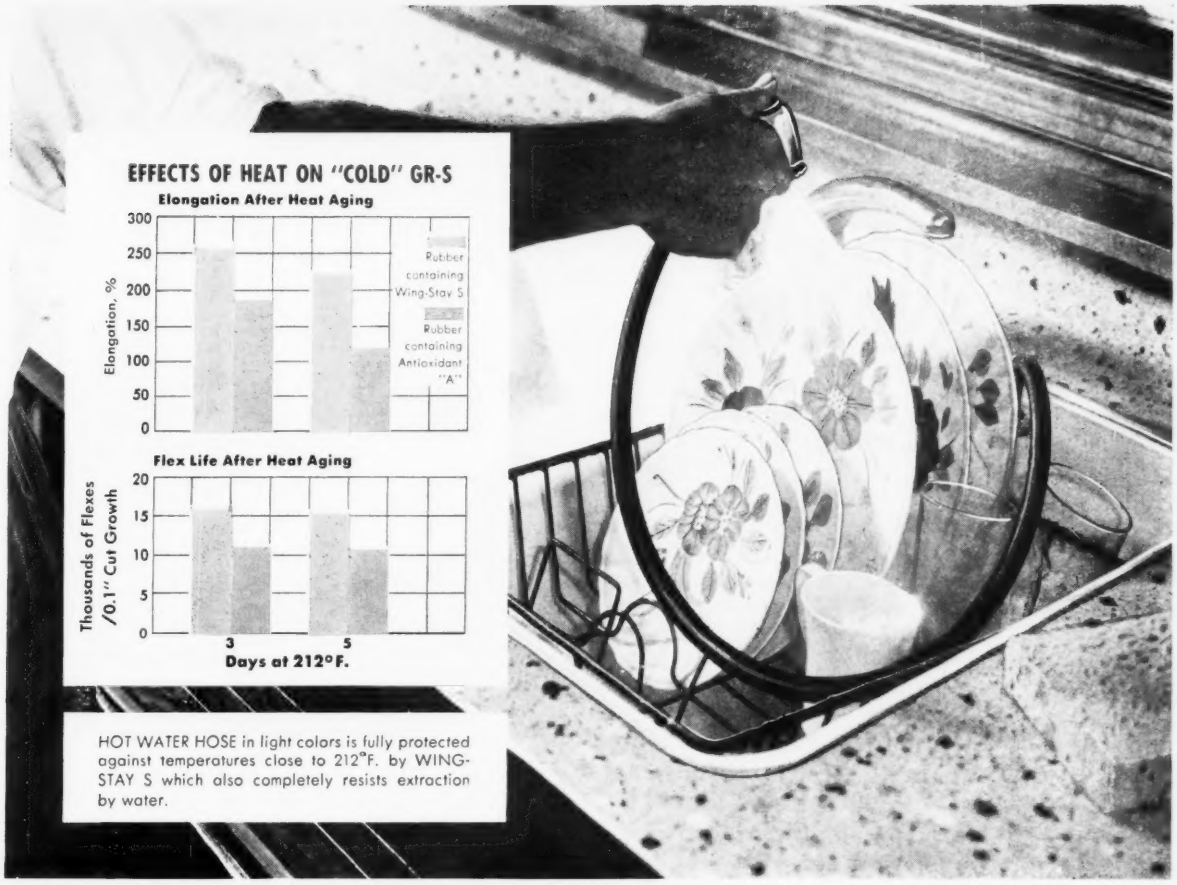

HOT WATER HOSE in light colors is fully protected against temperatures close to 212°F. by WING-STAY S which also completely resists extraction by water.

TO BEAT THE HEAT

protect rubber with *Wing-Stay S*

BEST way to beat the heat in its attack on rubber is with WING-STAY S – today's outstanding, nonstaining, non-discoloring antioxidant.

WING-STAY S is a liquid phenol styrene copolymer. It readily gives up hydrogen to "tie up" oxygen absorbed from the air. It resists heat, sunlight and extraction by water. It protects both natural and synthetic rubbers without odor, migration or discoloration.

WING-STAY S is widely used to protect GR-S. It is easily incorporated in both dry rubbers and latices. Try it in your present compound–nitrile or chloroprene rubbers excepted. Subject it to heat aging and sunlight exposure tests. You'll soon see that WING-STAY S offers the best balance of permanent protection, non-discoloring properties and low cost. For details, write to:

Goodyear, Chemical Division, Akron 16, Ohio

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Maximum whitening, brightening and opacifying effects per pound of pigment used are achieved with TITANOX-RA (rutile titanium dioxide). In addition, the uniformity of whiteness and light tints, so important to these products, is assured through your choice of TITANOX-RA as the white pigment.

Consult our Technical Service Department for friendly cooperation on problems in the white pigmentation of natural and synthetic polymers. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

1682

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TITANOX

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Biscuits at left are preheated, folded into thirds, then rapidly pressed into LP records with less "non-fill" and fewer rejects, thanks to PLIOVIC.

Photo courtesy Capitol Records, Inc.

Record Maker Reports:

FEWER REJECTS with PLIOVIC

SUCCESSFUL production of LP records calls for a relatively soft, free-flowing vinyl compound. Adequate flow is necessary for good mold reproduction in a fast pressing cycle. Too much flow, however, causes trouble through the compound running away during pressing with "non-fill" and too many rejects resulting.

Such was the problem of this famous maker of records. The standard compound flowed too freely – the number of rejects was too high. But the answer was found in PLIOVIC by Goodyear. By modifying the base resin with up to 25% PLIOVIC, the compound was stiffened and the flow decreased to just the rate needed. Net result has been the minimum in rejects from "non-fill."

PLIOVIC may well be the answer to your production problems, too. Best way to find out is to try PLIOVIC with the helpful assistance of your vinyl-wise Chemical Division representative. For full information and samples, write to:

Goodyear, Chemical Division, Akron 16, Ohio

Chemigum, Pliobond, Pliolite, Pliovic–
T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

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High Tear Resistance At Low Cost

SUPER MULTIFEX® and MULTIFEX MM®, our ultra-fine particle-size calcium carbonates, will give you soft, flexible, light-colored, top-quality GR-S and natural rubber compounds with maximum tear resistance at very low cost.

Other DIAMOND products such as Kalite®, Millical® and Non-Fer-Al® also produce specialized results. Familiarize yourself with our high-grade, precipitated calcium carbonates and achieve the salable effects enjoyed by so many other manufacturers.

If you haven't heard the DIAMOND story yet, why not call your friendly DIAMOND representative today? Or write us direct in Cleveland for technical literature. If you have a problem, let our Technical Service Laboratory help to solve it for you.

DIAMOND SALES OFFICES: New York, Philadelphia, Pittsburgh, Cleveland, Cincinnati, Chicago, St. Louis, Memphis, Houston.

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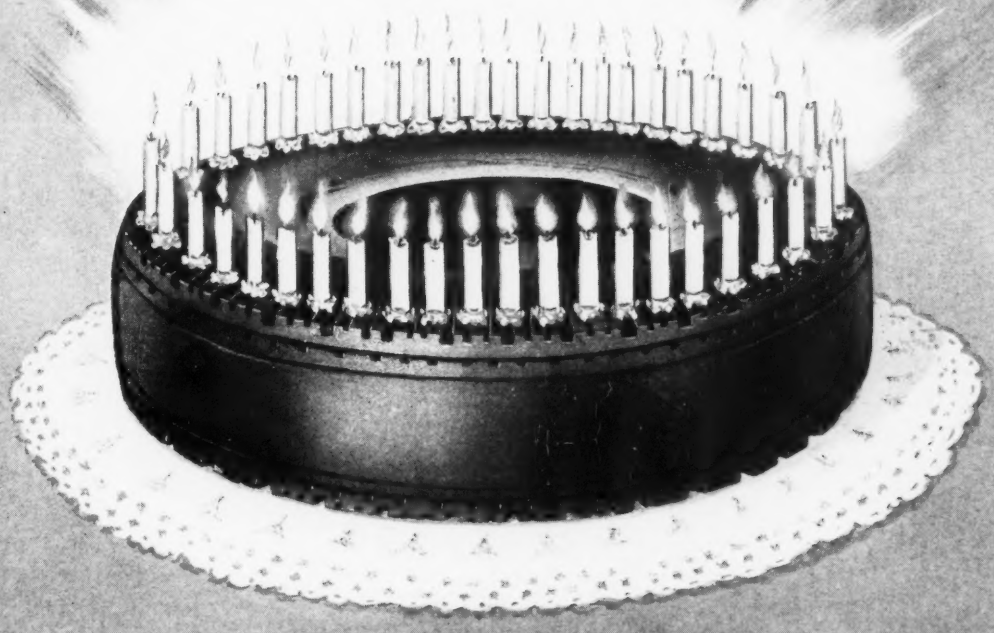
DIAMOND CHEMICALS FOR THE RUBBER INDUSTRY

DIAMOND ALKALI COMPANY • CLEVELAND 14, OHIO

Celebrating

our 43rd year of progressive leadership!



As a leading supplier to the rubber industry for over forty years—Muehlstein has constantly advanced the standards of service through increasing efficiency and progressive management. That's why today Muehlstein continues to be your most reliable source.

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POLYBUTENES

—economical plasticizers and rubber extenders

Oronite Polybutenes are an economical rubber extender in the manufacture of a wide variety of molded or extruded rubber products. Their light color makes them specially adaptable to molded rubber products of white or pastel colors.

In addition to extending, Polybutenes plasticize the mass of rubber making it more pliable for easy milling. They also assist in milling reclaimed rubber batches while acting as an extender, and have a field of usefulness in plasticizing various synthetic rubbers.

Product characteristics

Oronite Polybutenes are clear, light colored, chemically stable liquids of moderate to high viscosity and tackiness. They have excellent aging characteristics—do not become gummy or waxy, do not harden, darken or change in any essential property over long periods of atmospheric exposure. They can be readily emulsified using standard techniques and equipment. In the emulsified form, or in their natural form, they are useful as tackifiers, plasticizers or extenders for natural or synthetic rubber latices. Complete information is available in a technical bulletin.

Write or phone the Oronite office nearest you and talk over your problem with us.

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ORONITE CHEMICAL COMPANY
THE NAME TO WATCH IN CHEMICALS

2631

Buffalo's new powdered reclaim received a tremendous reception from the national press and industry!

It all started with a three page feature story in the August 29th issue of Business Week. Then the New York Times, Herald-Tribune, Wall Street Journal and many others were fast to act on the hottest news story to hit the rubber industry in many a moon.

"Flo-Mix" is an exclusive U. S. Rubber Reclaiming development that, to quote the Herald-Tribune, "will greatly increase the efficiency and speed of many manufacturing processes using rubber." Naturally faster in mixing and blending, this cleaner and easier handling reclaim brings you substantially lower costs Shipped in tank cars or in bags of uniform weight, it is adaptable for automatic weighing and handling.

"Flo-Mix" is especially suited for tire frictions, treads and sidewalls, molded mechanicals, footwear, soles and heels and industrial belting. A sister product, Buffalo Rubber Road Mix, is available for asphalt paving and specialty products. We've had a deluge of inquiries from producers of these items and, already, their test samples have proved out and we have shipped quantity orders for regular production. Can you use faster, easier processing "Flo-Mix" in *your* product? Write on your letterhead for sample and details now.

Always keep reclaims in your formula and always look to Buffalo for the best. U. S. Reclaiming Company, Inc., P. O. Box 365, Buffalo 5, N. Y. Trenton agent: H. M. Royal, Inc., 689 Pennington Ave., Trenton, N. J.

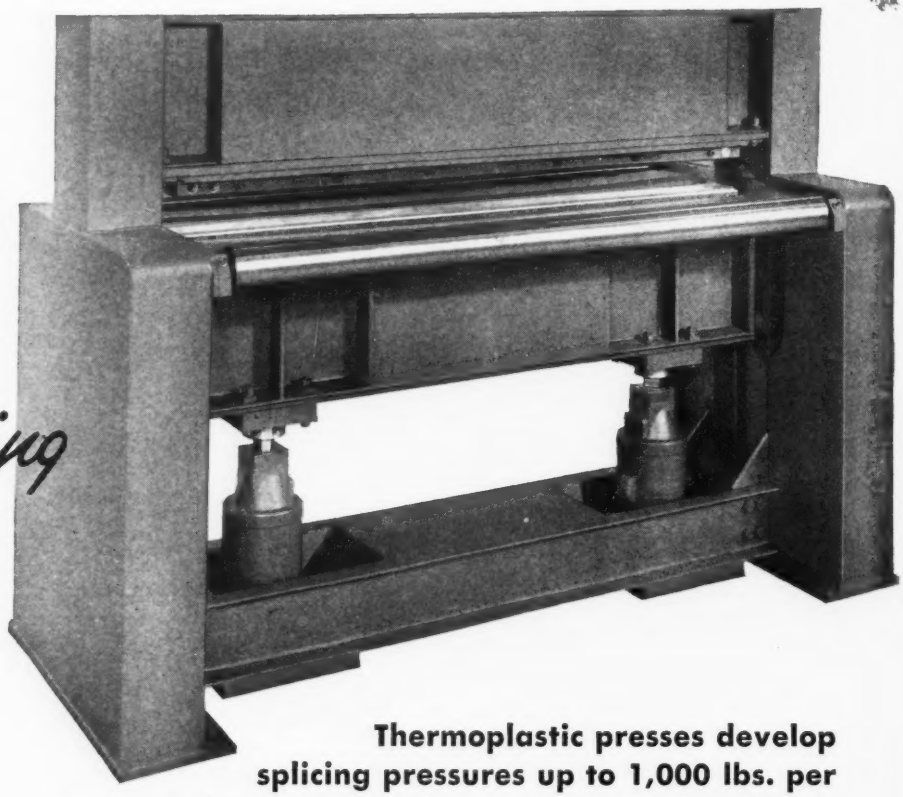
U.S. *70 years serving the industry solely as reclaimers*

U.S. RUBBER RECLAIMING COMPANY, INC.

IOI ENGINEERING VERSATILITY

SPLICE PRESSES

...for high tension processing lines



Thermoplastic presses develop splicing pressures up to 1,000 lbs. per sq. in. on the platens, with temperatures up to 600° F.

The higher tensions now in general use on tire cord lines have made it extremely difficult to hold satisfactory splices on materials being processed. IOI has overcome this rubber industry problem by developing thermoplastic splice presses capable of producing splicing pressures up to 1,000 lbs. per square inch on the platens.

IOI builds two standard sizes of splice presses, one for platen pressures up to 300 lbs. per square inch, the other for pressures up to 1,000 lbs. per square inch. Platens are 4" wide by either 72" or 78" long and are ground to precision tolerances to provide uniform clamping pressures. Both upper and lower platens are heated. Steam is used for temperatures up to 350°F., electricity for temperatures up to 600°F. The ability of these presses to hold extremely close temperature uniformity has been proved—some units showing under tests only a 1°F. variation over the entire face of the platens.

The units employ hydraulic pressure systems and are furnished with or without the hydraulic pumps. When furnished with the hydraulic system, units are shipped complete, ready for immediate installation.

IOI splice presses are compact in design and ruggedly constructed to withstand the stresses produced by the extremely high hydraulic pressures. They are equipped with safety devices to safeguard the operator. High operation speed is assured by an automatic splicing cycle.

Space requirements for these presses are extremely small, permitting convenient placement in most existing floor plans.

Write for detailed specifications and prices.

INDUSTRIAL IOI ENGINEERING VERSATILITY **OVENS, INC.**

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ORLD

You're in for A BIG SURPRISE

WHEN YOU TRY

GLYCERIZED LUBRICANT

(LIQUID CONCENTRATE)

THE ALL PURPOSE RUBBER LUBRICANT FOR

NATURAL SYNTHETIC AND RECLAIM STOCKS

Prevents adhesion of hot rubber slabs when piled . . . banishes dust nuisance by replacing soapstone or talc . . . prevents sticking during cure of extrusions and flat pan coiled tubing . . . excellent release agent for molds, mandrels, air bags, belt drums . . . equally satisfactory for washing and finishing inner tubes; imparts satiny finish . . . greatly aids in the processing of insulated wire and cable. The Production Departments and Laboratories of many rubber manufacturers, through years of using GLYCERIZED, give ample proof of its outstanding qualities as a lubricant for natural, synthetic and reclaimed stocks.

Economical?

HIGHLY CONCENTRATED

1 drum makes up to 50 drums of working solution.

YES — HERE'S WHY

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RUBBEROL AND **SYNTHOL** TWO OTHER FACTORY PROVED RUBBER PROCESSING AGENTS

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Finding Answers to problems in Carbon Black

Pictured here is WITCO-CONTINENTAL's Carbon Black Technical Service and Research Laboratory – one of the most modern and complete laboratories in the carbon black field. Second to none in the quality of its staff and facilities, it puts the latest research and scientific testing equipment to work on *your* problems . . . whenever you say the word.

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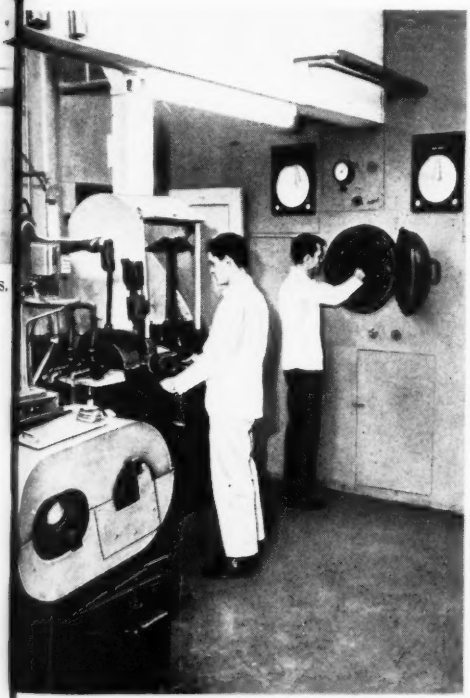
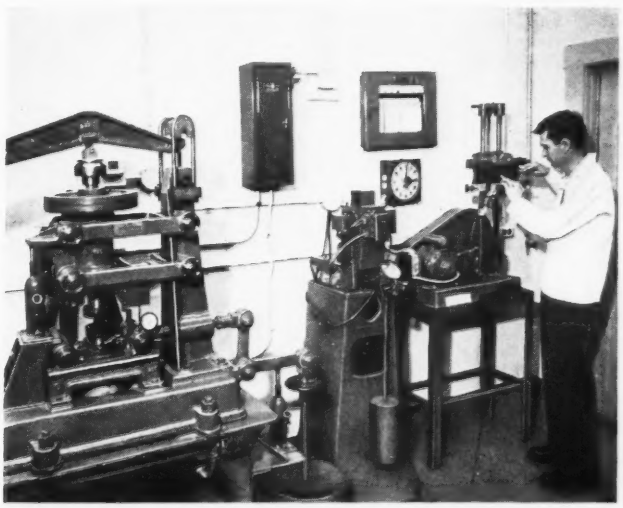
Royal tuber (one-half size) for evaluation of special extruding compounds.

Scott tester for determination of tensile strength of rubber compounds.

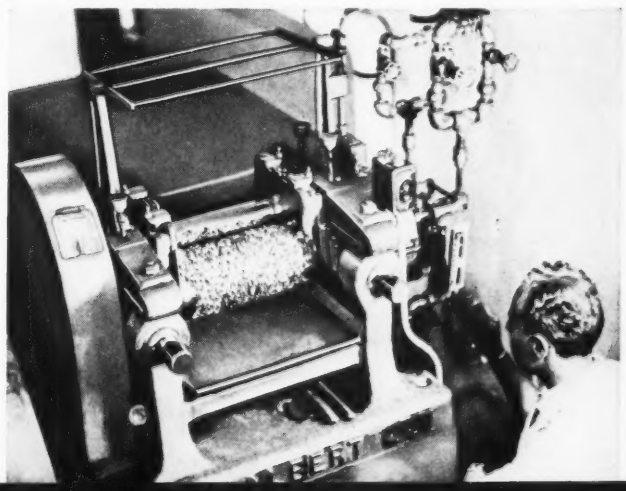
Curing press, completely enclosed in operation to provide exact curing temperatures.



Section of laboratory mill room, showing rubber mills and open steam vulcanizer.



St. Joe Flexometer and other testing equipment used in evaluating rubber compounds for industry.



Rubber mill on which rubber test batches are compounded.

* ANNOUNCING a new ADAMSON UNITED.

This 28″ x 78″ Zee-type unit, shown without guards, is driven by universal spindles of the anti-friction bearing type, a significant improvement over the obsolete bronze slippers. The main bearings, which can be either anti-friction or bronze sleeve type, are lubricated by a circulating oil system. Individual sight gages and control valves are provided for controlling flow of lubricant to the main bearings and pull-back bearings.

Zee-Type

PRECISION

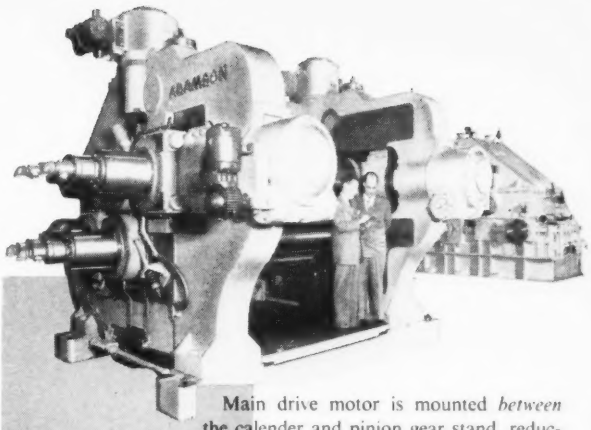
CALENDER

The new Adamson 4-roll calender is a completely modern Zee-type unit, especially designed for double-coating tire cord or producing two-ply laminated material. The improved features available on this unit greatly increase the accuracy of calendering operations, and assure a more uniform product with substantial savings in material. Higher production speeds can be obtained; and crown compensating equipment provides uniform transverse gage under varying conditions of operation.

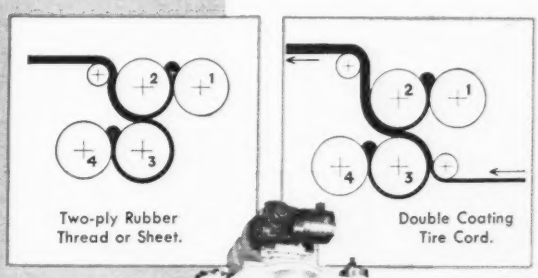
This high-speed unit incorporates a separate pinion gear stand which encloses all drive gears and connecting gears, driving the rolls individually through universal couplings. The peripherally drilled rolls are accurately controlled by a pressurized circulating water temperature regulation system.

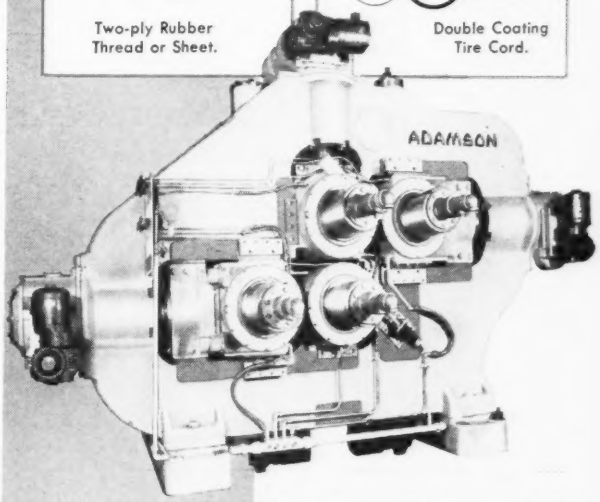
In addition to the unit shown, a modified calender, incorporating crossed axis equipment on only the #1 or the #4 roll is available for plastic film or sheeting. Adamson also manufactures a 24″ Zee-type calender, along with a special 6-roll double Zee-type unit.

We invite your inquiries.



Main drive motor is mounted *between* the calender and pinion gear stand, reducing overall length significantly. Gage adjusting equipment is unitized construction, assuring positive alignment, with double enveloping worms and worm gears mounted in anti-friction bearings.





Both offset rolls (#1 and #4) are "crossed" in the vertical plane by motorized adjustments allowing operator to compensate for deflection of the rolls. The operator can add or subtract crown, in effect, by changing the amount of crossing of the two offset rolls with respect to the two stack rolls. Selsyn equipment and counters are provided for indicating the exact vertical position of each end of the crossed rolls.

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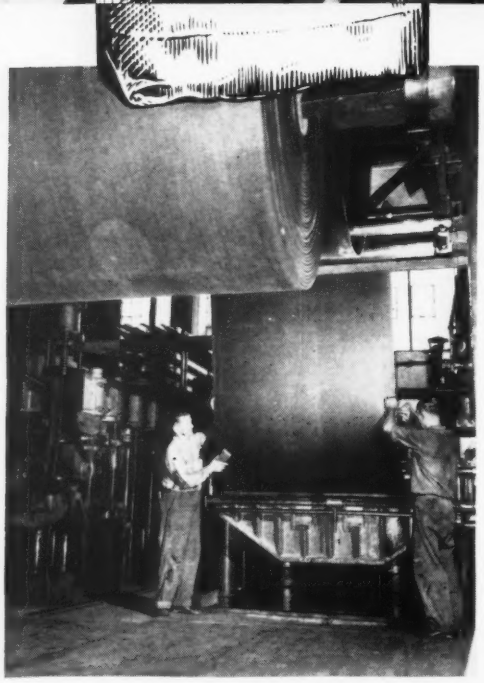

Top photo: A conveyor belt moves coal at the Pine Ridge Coal Company plant, Detroit, Mich.

Above: Conveyor belt is inspected as it is vulcanized in the plant of a leading rubber manufacturer.

Rubber does some things no other material will do. And it does many things no other material will do as well. The wear and abrasion resistance of rubber is increasingly utilized in mining. Here, belt conveyor systems are providing the most economical means of handling ore or coal in bulk—underground or overland.

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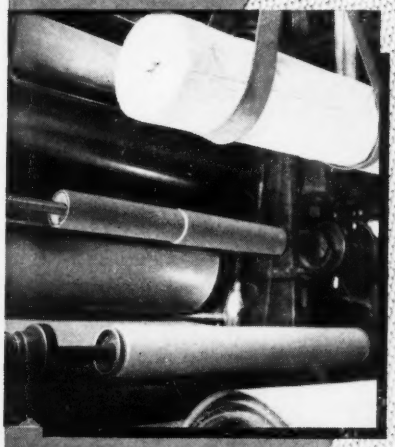

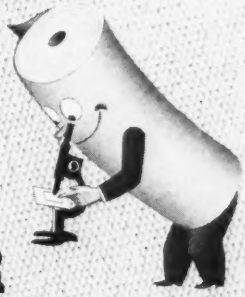

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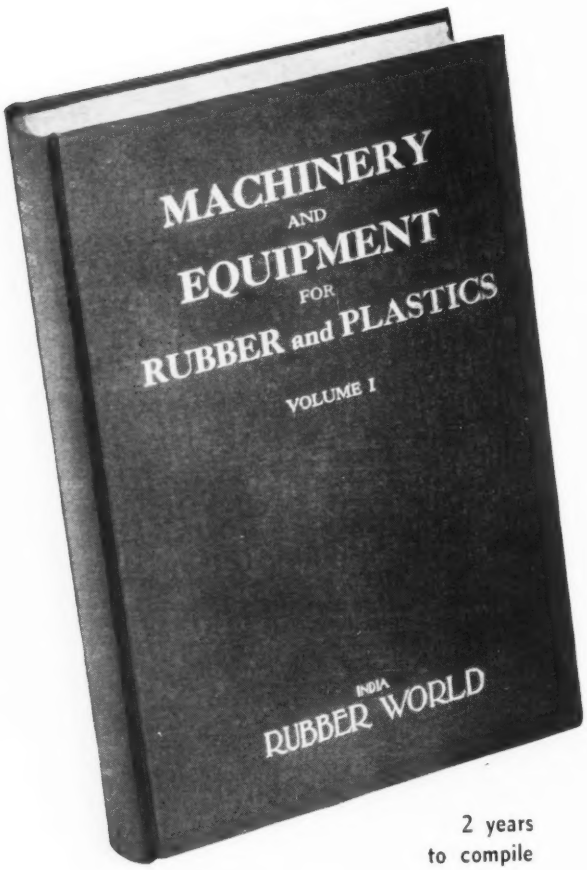

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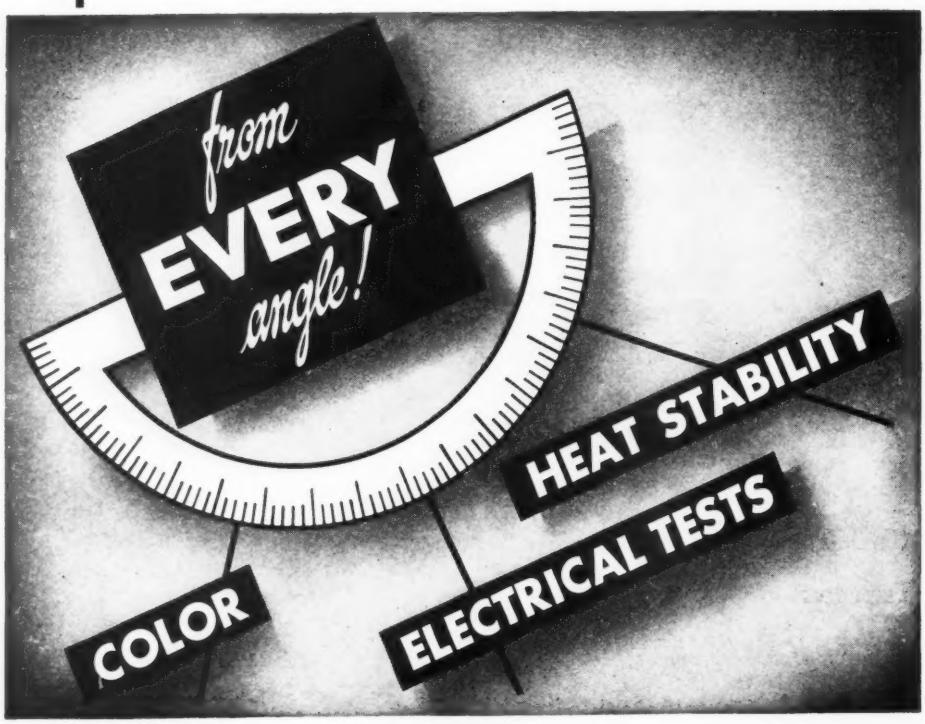

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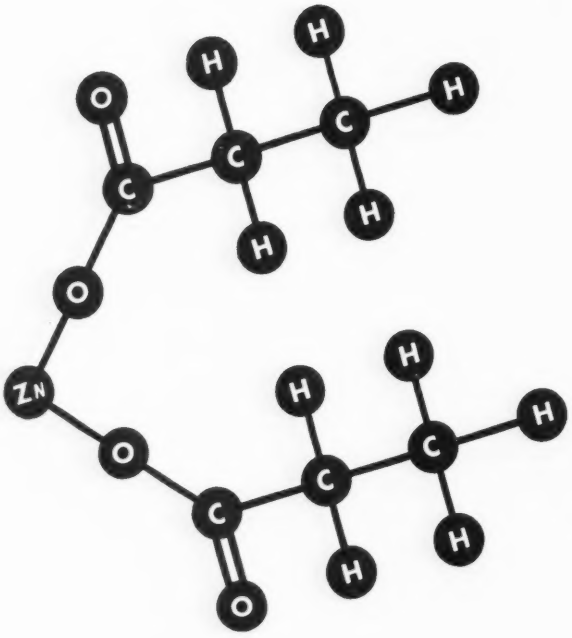

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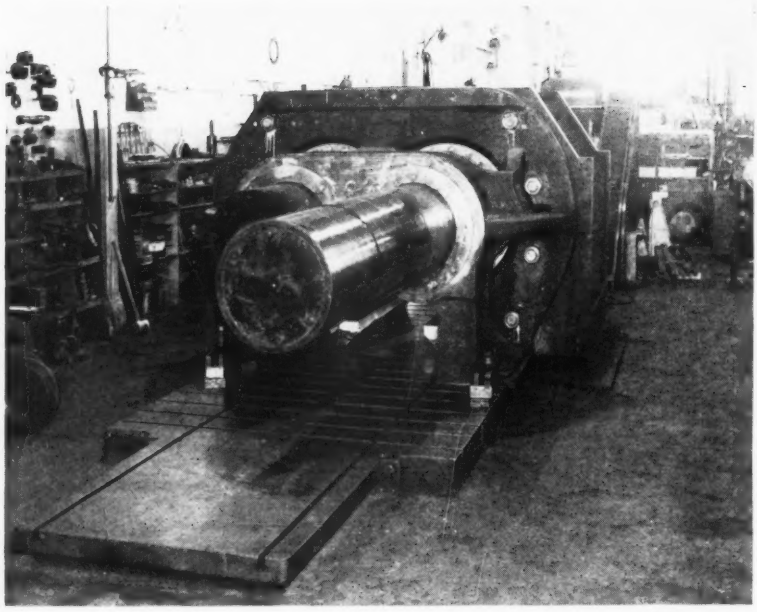

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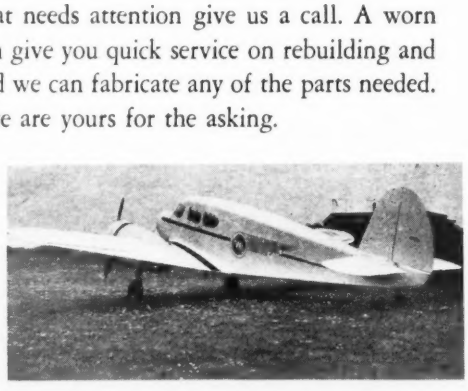

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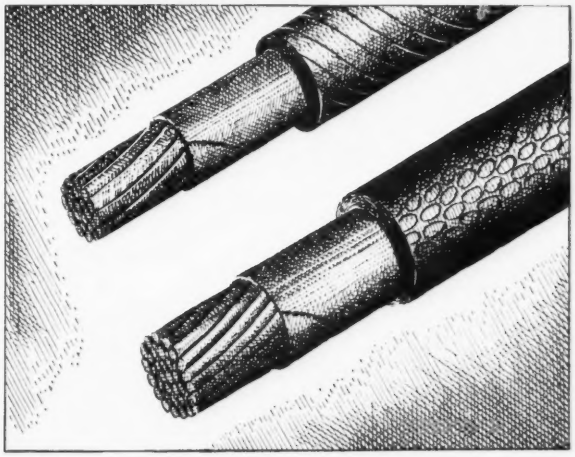

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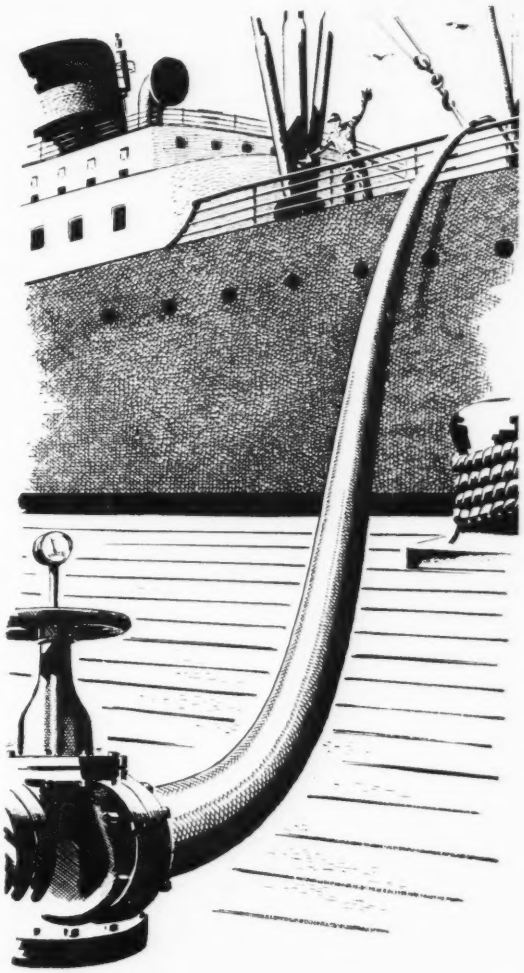

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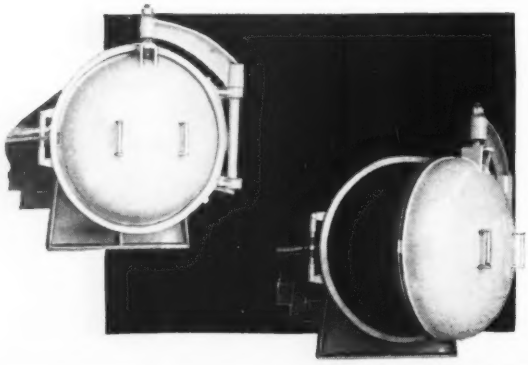

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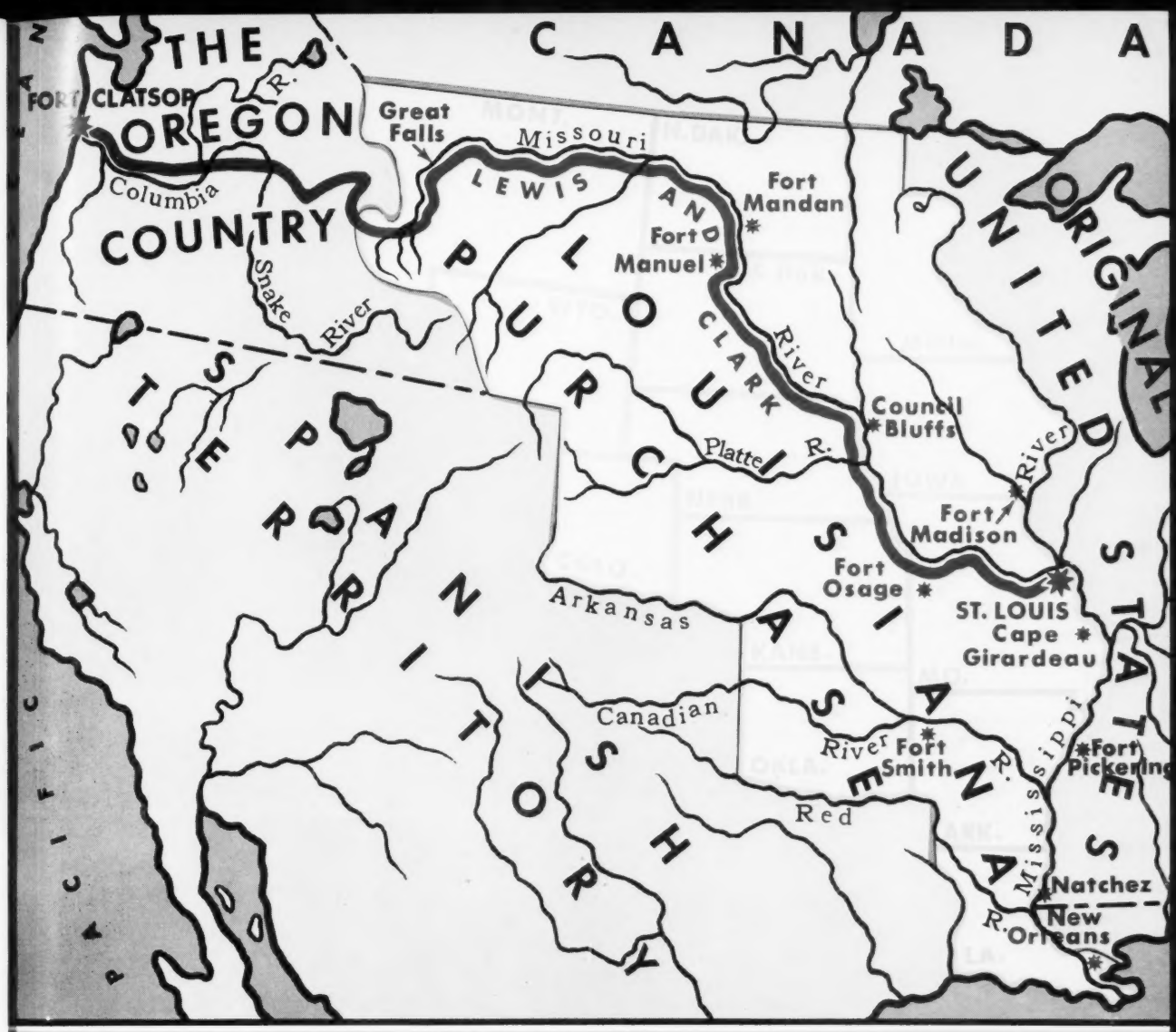

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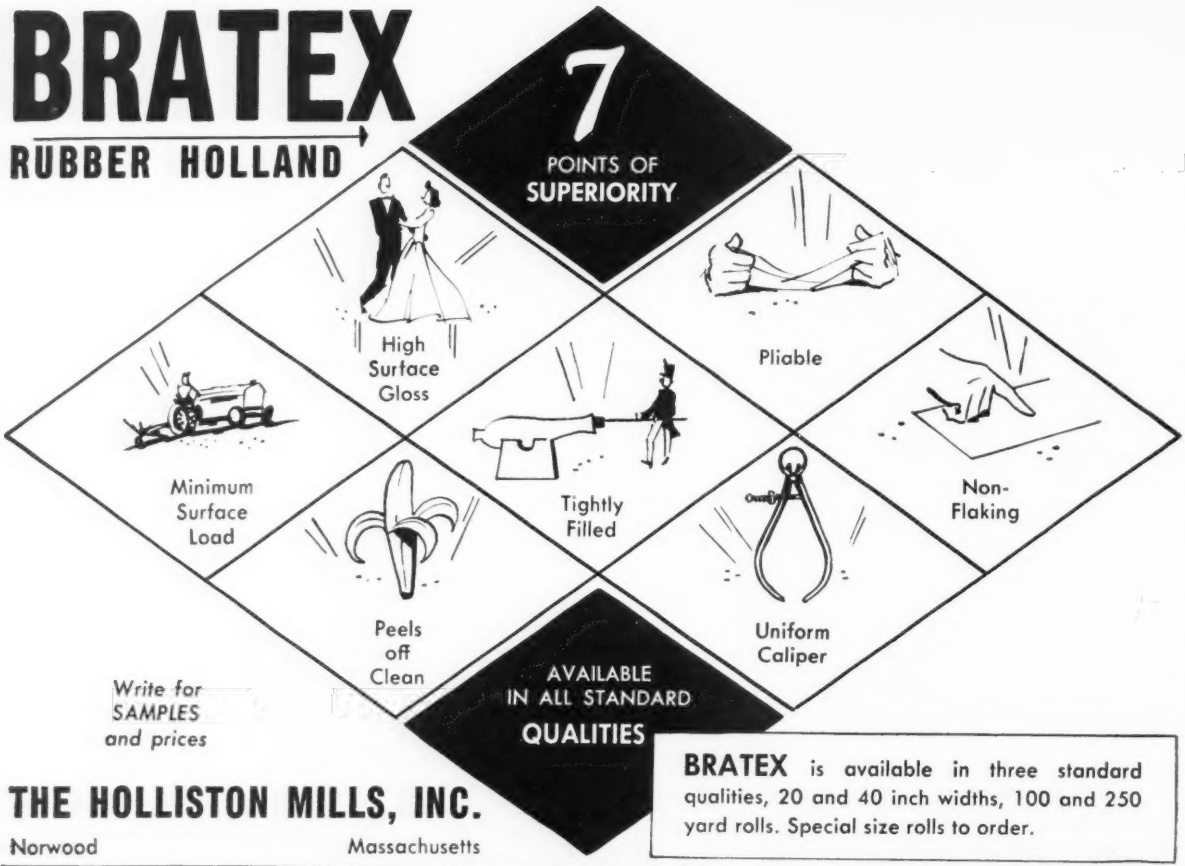

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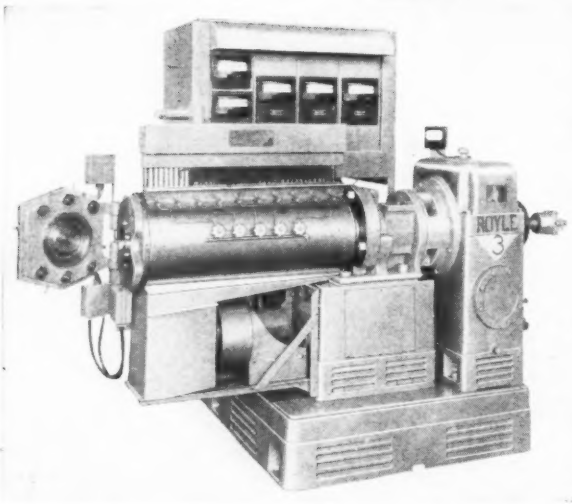

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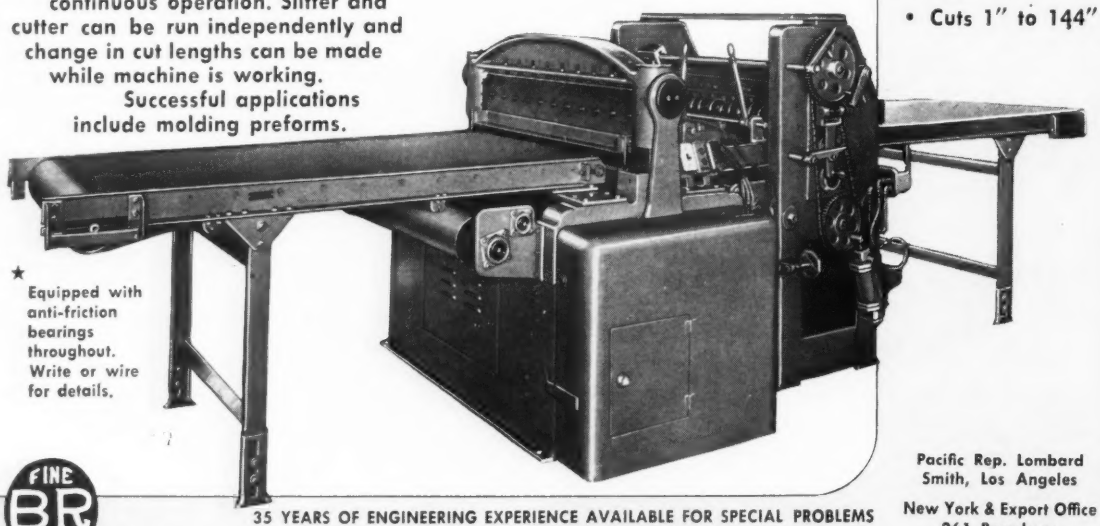

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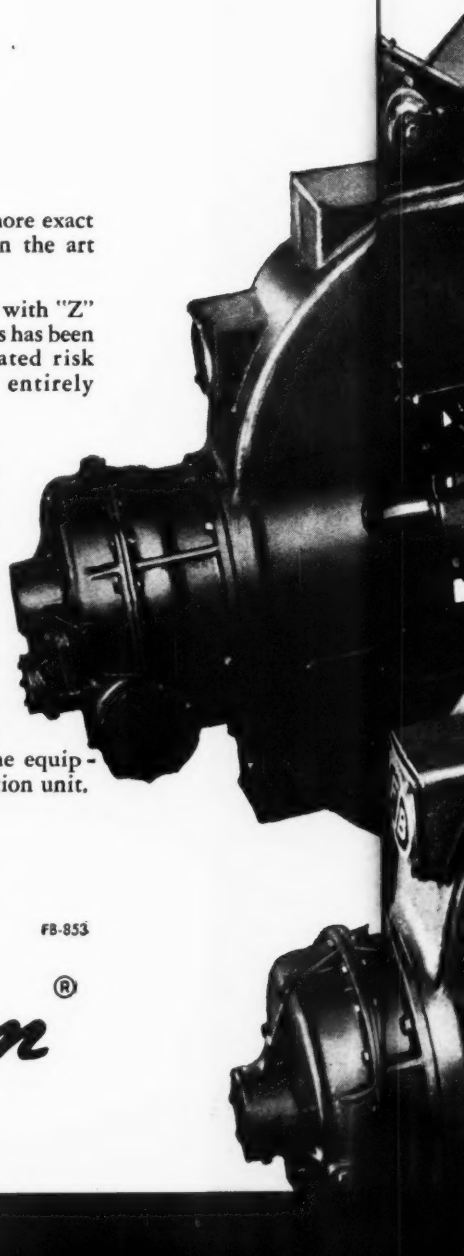

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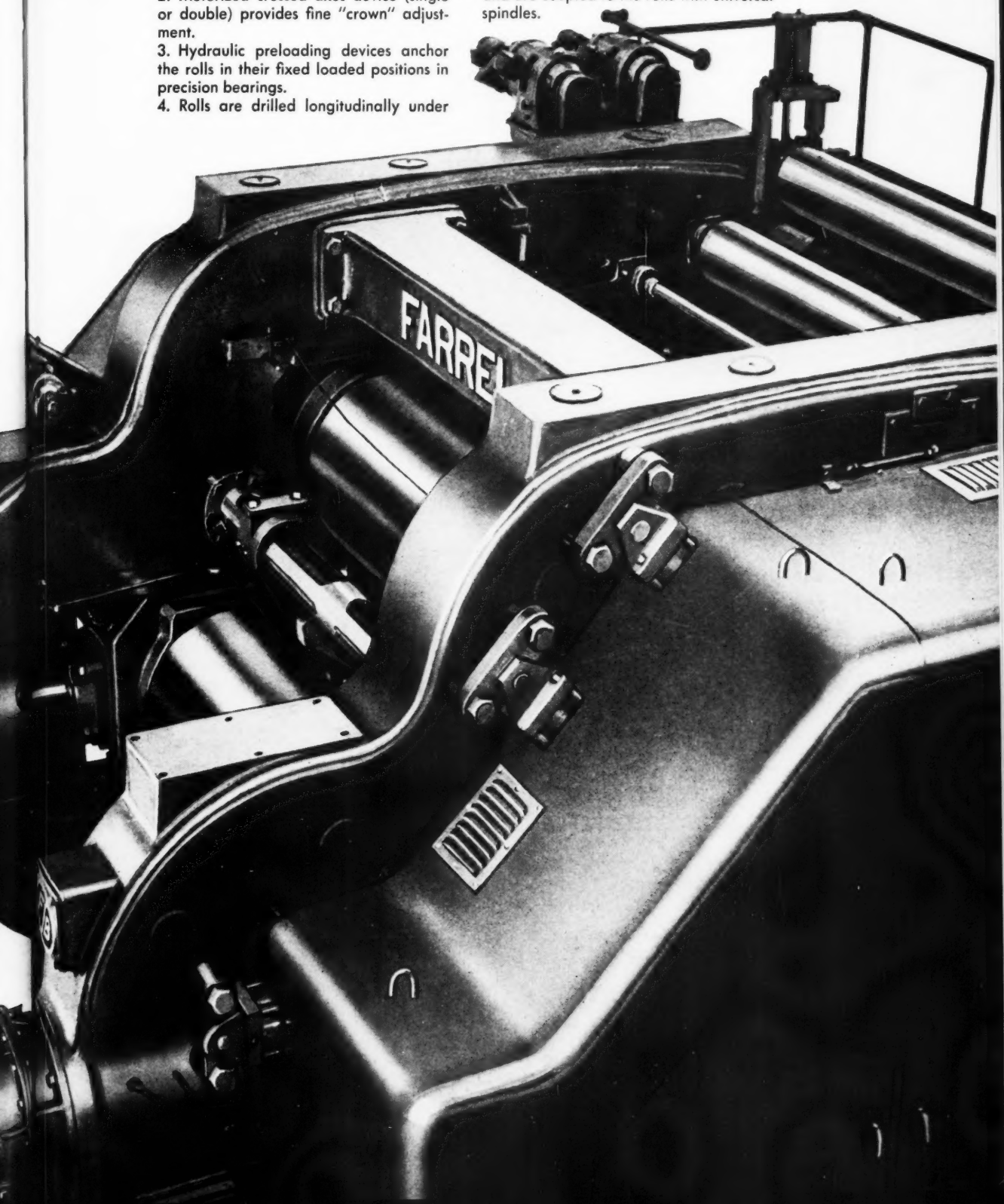

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MPC Black	.....	60
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MBTS	1.5	1.5
TMTDS	0.5	.....
DPG	.....	0.2
25°C. m.p. Coumarone resin	8	8
Aromatic softener	7	
Stearic Acid	1.5	1.5

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90	2030	4200	490	78	70	430
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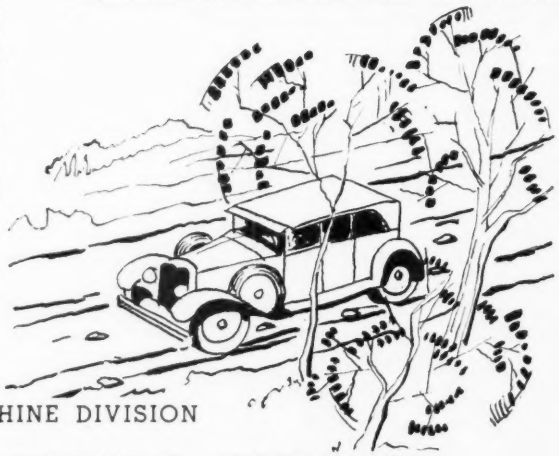

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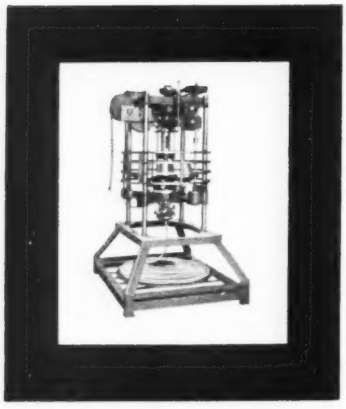

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Compounding Butyl Rubber for Mineral-Filled Stocks

W. C. Smith[1]

THE compounding information on butyl rubber which has been published during the past decade (1-6)[2] places main emphasis on carbon black stocks. There are many applications, however, in which color, cost, or special electrical properties are of ruling importance, and for which information on mineral filler compounding, processing, and curing is necessary. The purpose of this paper is to disclose general information that may be useful in the latter field.

A large variety of oxides, silicates, carbonates, sulfates, and other mineral fillers is commercially available in particle sizes ranging up to 10 microns or more. These differ considerably in their chemical and surface properties, and it is apparent that some modifications in the present compounding or curing recommendations might be necessary for certain specific applications. While mineral fillers are generally recognized to be inferior to carbon blacks in their reinforcing properties, the recent appearance of certain mineral fillers of fine particle size has nevertheless made possible a fair degree of reinforcement (5), together with other desirable properties.

Mixing and Mill Roll Sticking

Butyl accepts mineral fillers quite readily, either on the mill or in the Banbury. As a rule, the filler can be added directly in the required loading, although it is possible that in some instances the practice of preparing concentrated masterbatches (7), which has given superior results in natural rubber and GR-S, may be preferable. High loadings of mineral fillers in butyl, however, can produce mill roll sticking. The loading limit beyond which such sticking will occur varies widely with the nature of the filler. This point is illustrated in Figure 1 for a variety of the more common mineral fillers. It will be noted that some fillers produce sticking at loadings as low as 10 volumes; while others can be successfully employed at over 80 volumes. Also, the nature or degree of mill sticking varies considerably, as indicated in the figure. It is useful to know that the sticking threshold of a given filler can be raised to a higher loading level by premixing such a filler with one having a higher loading limit. In other words, a given filler can be successfully mixed at loadings beyond its sticking limit by means of judicious blending practice.

The loading limits shown in Figure 1 will not necessarily apply to Banbury mixing. It has been observed, however, that the Banbury results parallel those obtained from mill mixing.

Moderate sticking can be reduced or eliminated by adding 1-3 parts of stearic acid or zinc stearate to the butyl prior to filler addition. Severe sticking can often be eliminated by using 1-2 parts of TBEP (tributoxyethyl phosphate) or BXDC (butoxyethyl diglycol carbonate).

Extrusion, Calendering, and Frictioning

The minimum loading for good extrusion is 25-30 volumes for mineral fillers; for calendering it is slightly lower. Owing to the elastic properties of mineral-filled butyl compounds, the amount of die-swelling after extrusion is somewhat greater than is usually experienced with corresponding natural rubber or GR-S compounds. Consequently reduced die sizes may be required. Some fillers, particularly the Alons, diatomaceous earths, Whitetex, Silene, Hi-Sil, and clays reduce the nerve of

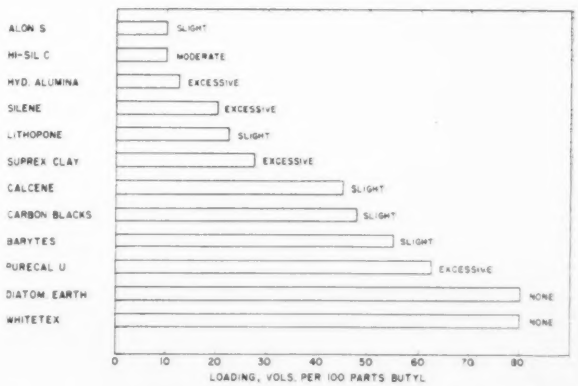

Fig. 1. Loading Limits and Degree of Mill Sticking for Various Mineral Fillers in Butyl

[1] Esso Laboratories, Standard Oil Development Co., Linden, N. J.
[2] Numbers in parentheses refer to Bibliography items at end of article.

TABLE 1. TENSILE, MODULUS, AND AGING DATA FOR VARIOUS MINERAL FILLERS IN STEAM, AIR, AND NON-PRESSURE CURES

Filler*	Tensile, Psi.			Modulus @ 300%, Psi.			Geer Oven Aging (48 Hrs. @ 250° F.), % Tensile Retention		
	Steam	Air	Non-Pressure	Steam	Air	Non-Pressure	Steam	Air	Non-Pressure
Aluminum Hydrate C 730	1380	1480	540	130	0	0	91	88	—
Barytes	800	1100	580	0	0	0	66	55	—
Calcene	830	910	770	0	0	110	83	92	—
Celite 270	680	930	690	0	260	290	80	93	—
Lithopone	1440	1380	630	0	0	0	73	70	—
McNamee Clay	910	640	630	100	220	190	80	100	—
Suprex Clay	1270	1370	800	0	230	180	84	60	—

*For suppliers of fillers listed below, see Table 14.

TABLE 2. APPLICABILITY OF VARIOUS CURATIVE COMBINATIONS IN MINERAL-FILLED BUTYL COMPOUNDS

Curative Combination	I	II	III	IV	V	VI	VII
Tensile range, psi.	900–2200	250–1100	600–1500	700–1600	1200–2200	600–800	400–1000
Minimum cure temperature, °F.	200	250	250	250	260	250	Room temperature
Curability	All curative combinations are curable in steam, air, and non-pressure heats, with the exception of Combination II, which is not curable in a non-pressure heat.						
Cured stock color							
(a) With sulfur	Neutral	Black	Black	Medium brown	Neutral	——	Dark brown
(b) Without sulfur	——	Brown	Brown	Gray	——	Brown	Brown

butyl; their effectiveness is in the order named. Extrusion rate may be increased by the use of up to 10 parts of process oils, waxes, or metallic stearates. These materials, however, will usually increase die-swelling.

In frictioning, roll release agents including stearic acid should be omitted. Process oils, saturated rosin esters, and reacted alkyl phenolics may be added to soften the stock and induce good splitting.[3] Filler loadings of 20-40 volumes should be employed. Increased splitting can also be effected by using, as part of the filler loading, some of the fillers shown in the upper part of Figure 1. It may be mentioned that mineral-filled butyl stocks cling to the cooler roll.

Steam, Air, and Non-Pressure Cures

A manual (8) published in 1948 contains the results of a comprehensive study on mineral-filled butyl stocks which were press-cured. The following information is intended to supplement the above-mentioned data for steam, air, and non-pressure cures. It is based on the recipe: butyl (GR-I) 100, zinc oxide 5, stearic acid 1, tetramethylthiuram disulfide 1, sulfur 1.5, and mineral filler, 30 volumes.

Table 1 contains tensile, modulus, and aging data for various mineral-filled butyl vulcanizates which had been subjected to the three types of cure. Steam cures were carried out at 40 psig., and the corresponding data are averages of the 60- and 90-minute cures for tensile, and of the 30-, 60-, 90-, and 120-minute cures for modulus. Air cures were carried out at 30 psig. at 250° F., and non-pressure cures were also carried out at 250° F. For these two types of cures, the tensile data are averages of four- and six-hour cures, and the moduli are averages of the two-, four- and six-hour cures. Geer oven aging was carried out for 48 hours at 250° F., and the results are expressed in terms of % retention of tensile strength. Aside from the differences in properties exhibited by the various fillers, Table 1 shows that, with two exceptions, air pressure cures give the highest, and non-pressure cures the lowest, tensile properties; the steam pressure cures are intermediate. It is also seen that the mineral fillers give considerable variation in tensile retention on Geer oven aging.

Accelerators and Vulcanizing Agents

A previous publication (8) discloses properties obtainable in butyl for various sulfur and quinoid-type cures of carbon black stocks. This information is generally applicable to mineral-filled stocks except that with clays and fine particle silicas, which are rather adsorptive, acceleration must be increased. Table 2 contains supplementary general information showing the applicability of various curative combinations in mineral-filled butyl compounds. These combinations are as follows:

I. Tetramethylthiuram disulfide 1, Selenac 1, sulfur 2.
II. Dibenzo GMF 6, red lead 10, sulfur 1.5.
III. GMF 2, red lead 10, octadecylamine 1, sulfur 1.5.
IV. GMF 2, benzothiazyl disulfide 4, sulfur 1.5.
V. Tetramethylthiuram monosulfide 1, Polyac 0.5, sulfur 2.
VI. Dibenzo GMF 6, litharge 5.
VII. GMF 2, lead dioxide 4, sulfur 1.5.

The base formulation for the above combinations contained butyl 100, zinc oxide 5, stearic acid 1-2, and mineral filler in loadings ranging from 10 to 50 volumes.

For stocks required to give minimum discoloration or staining, zinc diethyl dithiocarbamate was found to be the preferred accelerator. It is slow curing in butyl, however, but can be boosted with Rotax or zinc benzothiazyl sulfide, as shown in Table 3. Fast-curing stocks which show some discoloration, but are essentially non-staining can be produced with tetramethylthiuram disulfide plus Tellurac or Selenac. The rapid cure rates indicated in Table 3 are retarded on addition of mineral fillers to the base formulation. The retardation is slight with whiting, but is rather marked with clay.

TABLE 3. BASE FORMULATIONS FOR MINIMUM STAINING OR DISCOLORATION

Butyl (GR-I-25)	100	100	100	100
Zinc oxide	5	5	5	5
Sulfur	2	2	2	2
Zinc diethyl dithiocarbamate	2	2	—	—
Rotax*	1	—	—	—
Zinc benzothiazyl sulfide	—	1	—	—
Tetramethylthiuram disulfide	—	—	1	1
Tellurac*	—	—	1	—
Selenac*	—	—	—	1
Titanium dioxide	20	20	20	20
60 Minutes @ 260° F.				
Tensile, psi.	1820	1340	560	690
Modulus (400%), psi.	60	60	170	120
Elongation, %	910	940	580	630
Shore A	22	22	28	28
90 Minutes @ 260° F.				
Tensile, psi.	1690	1540	290	290
Modulus (400%), psi.	110	110	200	230
Elongation, %	820	830	430	420
Shore A	27	25	32	32
120 Minutes @ 260° F.				
Tensile, psi.	590	830	220	250
Modulus (400%), psi.	160	150	—	—
Elongation, %	610	690	370	370
Shore A	27	28	32	33
Cured stock color	White	White	Gray	Yellowish
Sunlight discoloration	Nil	Nil	Appreciable	Appreciable
Contact staining	Nil	Nil	Very slight	Very slight

*For supplier see Table 14.

[3] Partial, even transfer of stock from the roll to the fabric.

TABLE 4. PROOFING FORMULATIONS FOR ROLL CURES

	I	II	III
Butyl (GR-I)	100	100	100
Zinc oxide	5	5	5
Zinc stearate	3	3	3
McNamee Clay*	104	104	104
Titanium dioxide	15	15	15
Sulfur	2	2	2
Tellurac*	1	1	—
Selenac*	—	—	1
Tetramethylthiuram disulfide	1	1	1
Mercaptobenzothiazole	—	0.5	—
Mooney scorch @ 50° F.†	7	7	13

	Air Pressure Cures at 30 Psig. and 270° F.											
	Tensile	Modulus (200%)	Elong.	Shore	Tensile	Modulus (200%)	Elong.	Shore	Tensile	Modulus (200%)	Elong.	Shore
20-minute cure	1090	300	640	48	940	150	600	50	910	150	720	37
40-minute cure	1170	200	610	50	800	300	540	50	920	150	700	38
60-minute cure	1050	240	610	48	1000	310	580	50	850	250	710	39
80-minute cure	890	360	540	52	940	300	530	53	860	190	650	45
	Air Oven Cures at 200° F.											
8-hour cure	830	140	690	44	980	150	700	47	630	140	680	35
16-hour cure	830	140	640	50	990	290	660	52	660	130	660	37
24-hour cure	680	140	610	47	840	160	590	53	750	140	680	40
36-hour cure	580	140	520	48	640	150	500	53	740	140	650	42

*For supplier see Table 14.
†Expressed in minutes to first Mooney increase of two units per minute.

TABLE 5. COMPOUNDS FOR CONTINUOUS VULCANIZATION

	I	II	III	IV
Butyl (GR-I-15)	100	100	100	100
Zinc oxide	5	5	5	5
Stearic acid	1	1	1	1
Whitetex No. 1*	135	135	135	135
Sulfur	2	2	2	2
Tetramethylthiuram disulfide	2	—	—	—
Tetrone A*	—	3.18	—	—
Cumate*	—	—	2.52	—
Tellurac*	—	—	—	2.74
Mercaptobenzothiazole	0.5	0.5	0.5	0.5
Mooney scorch @ 250° F.†	17	5	13	2

Cure Seconds, at 400° F.	Tensile	Modulus (200%)	Elong.	Tensile	Modulus (200%)	Elong.	Tensile	Modulus (200%)	Elong.	Tensile	Modulus (200%)	Elong.
10	—	—	—	—	—	—	930	140	920	960	180	830
15	1000	190	830	990	210	820	—	—	—	1060	190	820
20	1210	230	790	1190	300	800	1220	210	810	1280	250	770
40	1370	330	710	1020	400	600	950	260	680	960	340	630
60	1160	320	680	790	440	470	740	310	530	860	380	550
80	1070	330	660	750	480	430	620	320	470	780	370	520
100	1080	340	620	850	490	440	630	320	480	730	410	490
120	890	320	640	790	500	430	540	300	440	750	420	490

*For supplier see Table 14.
†Expressed in minutes to one unit over minimum value.

TABLE 6. QUINOID-TYPE COMPOUNDS FOR CONTINUOUS VULCANIZATION

	I	II	III
Butyl (GR-I-R21)	100	100	100
Zinc oxide	5	5	5
Stearic acid	1	1	1
Process oil	5	5	5
Whitetex No. 2*	100	100	100
Sulfur	1	1	1
GMF*	2	2	2
Benzothiazyl disulfide	4	4	4
Chloranil (Vulklor)*	—	0.5	0.5
Calcium oxide	—	—	5
Mooney scorch @ 250° F.†	4	3	3

Cure Seconds, at 400° F.	Tensile	Modulus (200%)	Elong.	Tensile	Modulus (200%)	Elong.	Tensile	Modulus (200%)	Elong.
5	—	—	—	—	—	—	580	250	480
10	—	—	—	490	240	410	670	290	460
15	370	160	440	560	270	390	780	300	510
20	440	170	470	640	280	430	750	350	470
40	730	230	570	710	320	420	860	390	470

*For supplier see Table 14.
†Expressed in minutes to one unit over minimum value.

The compounds shown in Table 4 are of interest in proofing work, where roll curing is often employed. The tabulated cure data were obtained for thin calendered strips cured flat in air pressure and air oven heats. It will be noted that good cures are obtainable at temperatures as low as 200° F., and that Tellurac is considerably faster than Selenac, both in scorch and cure rate. The data again show the difference in tensile and modulus levels previously mentioned for pressure *vs.* non-pressure cures.

Mineral-filled butyl compounds which cure very rapidly at elevated temperatures are important in connection with continuous vulcanization, as in electrical insulation work or high-speed proofing. Table 5 contains data for compounds meeting these requirements. The cures were made in a special laboratory press designed for rapid

TABLE 7. EFFECT OF FILLER TYPE ON HYDROGEN PERMEABILITY

20 Vols. Filler*	Permeability†
Butyl, pure gum (no filler)	2.85
Suprex Clay	1.30
Celite 270	1.34
MT Black	1.59
SRF Black	1.65
EPC Black	1.76
Aluminum Hydrate C730	1.80
Calcene	2.01

*For suppliers of fillers see Table 14.
†Expressed in liters/sq. meter/10 mils thickness/24 hrs. at 25° C.

TABLE 8. EFFECT OF FILLER LOADING ON HYDROGEN PERMEABILITY

	Hydrogen Permeability*	
Loading (Volumes)	Suprex Clay	SRF Black
0	2.85	
20	1.30	1.65
40	0.95	1.05
60	0.69	0.70

*Same units as in Table 7.

opening. The temperature was electrically controlled at 400° F., and the cured specimens, which were 1¾- by 2½- by 0.020-inch, were removed manually and plunged into ice water. The latter operation could be performed in not more than three seconds. Preliminary studies leading to the formulations in Table 5 showed that mercaptobenzothiazole invariably promoted the activity of the primary accelerator. It is seen that the stocks containing tetramethylthiuram disulfide or Cumate are considerably less scorchy than are those containing (molecularly) equivalent amounts of Tetrone A or Tellurac. Nevertheless the Cumate stock is the equal of the Tellurac stock in its brief induction period. Other accelerator combinations were tested, but were found to be inferior to those given in Table 5, principally in respect to state of cure. Among these were *(a)* Tetrone 2.52—mercaptobenzothiazole 0.5, *(b)* Bismate 3.74—mercaptobenzothiazole 0.5, *(c)* Bismate 1.87—tetramethylthiuram disulfide 1—mercaptobenzothiazole 0.5, and *(d)* tetramethylthiuram disulfide 1—Cumate 1.20.

The superior ozone resistance of quinoid-type cures led to a study of GMF-accelerated butyl compounds suitable for continuous vulcanization. It had been shown previously (9) that chloranil activates GMF-benzothiazyl disulfide-sulfur cures. It was found in this study that the presence of calcium oxide leads to still greater activation. Table 6 contains data showing these effects. In contrast to calcium oxide, magnesium and lead monoxides gave a retarding effect. Thick-wall extrusions of the stocks of Table 6 were made and cured in high-pressure steam (150 psig.). Vulcanizates from formula I were slightly porous; while those from formulae II and III were completely dense.

Abrasion Resistance

The difficulties in making laboratory abrasion measurements and correlating them with service experience are too well known to require comment. In the absence of better information, the Taber abrader was employed to carry out such measurements on mineral-filled butyl compounds as would be used in proof-goods applications. The measurements were made on unsupported pads from press cures. The general comments made below are limited to stocks containing 20 and 60 volumes of Suprex clay. Various cure times were employed, and the curative combinations examined were: *(A)* Tetramethylthiuram disulfide 1—Selenac 1—sulfur 2, *(B)* Dibenzo GMF 6—red lead 10—sulfur 1.5, and *(C)* GMF 2—benzothiazyl disulfide 4—sulfur 1.5.

The results clearly showed that increased loading markedly improves abrasion resistance. When the clay loading was held constant at 60 volumes, abrasion resistance decreased with increasing time of cure, with some evidence of a minimum for the curative combination *(C)*. The loss in abrasion resistance with increasing time of cure is in apparent contrast with results reported by Upham (10) for natural rubber, the abrasion resistance of which reaches a maximum at essentially optimum tensile. On the other hand, Daynes (11) has reported abrasion data for natural rubber paralleling those reported here for butyl, although he has expressed some doubts about his experimental technique.

With 20 volumes of clay, the cured stock is too soft to resist severe gouging or rolling in the Taber abrader, even at advanced times of cure. Abrasion values obtained under such conditions are extremely erratic and questionable. Similar behavior was shown by butyl stocks containing 20 volumes of SRF black, but to a smaller extent.

For cure times ranging from 30 to 120 minutes at 287° F., the 60-volume clay stocks gave Taber abrasion loss values (mg. loss per 100 cycles) ranging from 19 to 74 for curatives *(A)*, from 32 to 206 for curatives *(B)*, and from 16 to 73 for curatives *(C)*. Combinations *(A)* and *(C)* therefore appear to be comparable in abrasion resistance and superior to *(B)*.

Permeability to Gases

Although butyl rubber is inherently very impermeable to the passage of gases and vapors, the degree of impermeability depends on the amount and the type of filler in the compound. Experiments were carried out for the purpose of determining the effect of mineral-filler type and loading on the permeability of butyl vulcanizates. The measurements were made with a Cambridge permeometer, employing hydrogen gas. While the permeability of a given compound will depend on the particular gas employed, as is well known, the trend data can be considered as roughly indicative of what would be obtained with other gases, at least on a comparative basis.

Table 7 contains permeability values for stocks containing 20 volumes of various fillers. The formula was: butyl (GR-I) 100, zinc oxide 5, stearic acid 1, sulfur 2, tertramethylthiuram disulfide 1, Selenac 1, and filler 20 volumes. The reported values are averages over a fairly wide range of cures. It was found in preliminary work that, for a given formulation, the hydrogen permeability did not vary strongly with time of cure. Table 7 shows that the permeability varies considerably with filler type. It is possible to interpret this behavior in terms of particle size, shape, and agglomeration, although it is felt that such an interpretation is irrelevant to the purpose of this paper.

The permeability decreases with increased filler loading, as is shown in Table 8. Although the data are quite limited, it appears that the difference in permeability due to filler type becomes smaller with increasing loading; in the present instance the values for the two fillers are practically identical at 60-volume loading.

No significant trends were observed in the permeability values as functions of time of cure or of type of cure. That is, sulfur cures with various accelerators and quinoid-type cures gave essentially the same values. It has been reported (12) for natural rubber that the hydrogen permeability decreases by about 30% when the combined sulfur increases from zero to 3%. It is scarcely possible to vary the combined sulfur in butyl by this amount, and this fact may explain why no significant dependence of permeability on time of cure was observed in the present study.

Low-Temperature Serviceability

Plasticizers in mineral-filled butyl proof-goods perform two functions, the prevention of cracking when the cold goods are subjected to sudden stress, and the retention of flexibility at low temperatures. The low-temperature serviceability of a clay-loaded butyl proofing compound was tested with a series of plasticizers. The resistance to cracking was determined by means of a test reputed to be used in the proofing industry; the origin of the test is not known to the writer. The compound under test is calendered on three-ounce cotton fabric to an overall gage of 0.02-inch. After cure, the coated fabric is cut into four- by six-inch strips. Each strip is folded sharply across the middle, with the rubber coating on the inside; the two central corners are then folded diagonally to form two contiguous triangles, much in the fashion of a child's paper toy hat. The envelope thus formed is placed under a 650-gram weight and cooled at a given tempera-

ture for five hours. The original folded edges are then manually pulled apart as rapidly as possible, and the folds are examined for evidence of cracking. Cracking through the rubber to the fabric constitutes a failure. Separate strips are thus tested at increasingly lower temperatures, until the lowest temperature at which the rubber will resist cracking is determined.

Table 9 shows the low-temperature cracking resistance observed with various plasticizers. The base formula was as follows: butyl (GR-I) 100, zinc oxide 5, stearic acid 1, tetramethylthiuram disulfide 1, Selenac 1, sulfur 2, Suprex clay 75, paraffin wax 3, and plasticizer (as indicated) 15. The coated fabric was cured under 30 psig. air pressure, with a one-hour rise to, and 2 hours at, 265° F. Table 9 shows that clay-loaded butyl proofing compounds can be made crack-resistant at temperatures as low as —80° F. by the proper selection of plasticizer.

TABLE 9. EFFECT OF VARIOUS PLASTICIZERS ON LOW TEMPERATURE SERVICEABILITY OF A BUTYL PROOFING COMPOUND

Minimum Temperature of Serviceability, °F.	Plasticizer
−40	None
−50	Dioctyl phthalate
	Dicapryl phthalate
−60	Trioctyl phosphate
	Bayol D*
	Dibenzyl ether
	Triamyl borate*
−70	Dioctyl sebacate
	Dioctyl phosphate
	Bayol F*
	Diisobutyl azelate (C. P. Hall 1889)
−80	Butyl cellosolve pelargonate (C. P. Hall 1919)

*For supplier see Table 14.

It should be pointed out that the above cracking test gives no value of low-temperature flexibility. Actually, all of the plasticizers listed in Table 9, with the exception of the Bayols, provide excellent low-temperature flexibility, as judged by hand.

TABLE 10. EFFECT OF STATE OF CURE ON OZONE RESISTANCE

	I	II
Butyl (GR-I)	100	100
Zinc oxide	5	5
Stearic acid	3	3
Sulfur	2	4
Tetramethylthiuram disulfide	1	1
Mercaptobenzothiazole	0.5	0.5
Clay (M-33)*	50	50

	Modulus			Modulus		
Cure, Min. at 287° F.	Tensile	(200%)	Elong.	Tensile	(200%)	Elong.
20	1350	60	920	1710	160	830
40	1670	110	850	1580	220	670
60	1680	140	720	800	280	530

	Ozone Resistance, Minutes to Failure†	
20	31 to 45	90 to 205
40	130 to 230	Greater than 420
60	110 to greater than 420	Greater than 420

*For supplier see Table 14.
†T-50 specimen, held at 50°, elongation in 0.015 volume % ozone in air. Values averaged for several specimens.

Ozone Resistance

Mineral-filled butyl compounds having excellent ozone resistance can be prepared both by the proper selection of the grade of butyl and by the use of certain compounding procedures. In general, the best ozone resistance is obtained with butyl of low chemical unsaturation (such as GR-I-35, formerly known as GR-I-R21). For a given grade of polymer, the ozone resistance improves with the state of cure. Table 10 shows how an increase in sulfur, as well as an increase in cure time, increases the ozone resistance of a clay-loaded stock.

Table 11 gives ozone resistance data for mineral-filled butyl stocks with quinoid-type cures. Again, increased cure time leads to greater ozone resistance. The effect of the change in filler type is not clear-cut; the data suggest a minor effect, if any.

Some softeners can influence the ozone resistance of clay-loaded butyl compounds. Table 12 shows that stearic acid and wax both improve the ozone resistance of such compounds, at least in quinoid-type cures. Unreported results show that certain process oils, such as Forum 40, are inert in their effect on ozone resistance.

Tables 10 to 12 are based on early formulations containing GR-I which, as has been mentioned, is inferior to GR-I-35 in ozone resistance because of its higher chemical unsaturation. The formulations employed in Tables 10 to 12 can be employed with a butyl such as GR-I-35, but the low unsaturation of the latter polymer will result in exceedingly slow cure rates in sulfur cures. Quinoid-type cures overcome this polymer deficiency through their greater reactivity.

Instead of going from a butyl polymer of intermediate unsaturation value (such as GR-I) to one of low value, comparable improvement in ozone resistance can be realized by diluting the GR-I with Vistanex, thus reducing

TABLE 11. EFFECT OF FILLER TYPE AND CURE TYPE ON OZONE RESISTANCE

	I	II
Butyl (GR-I)	100	100
Zinc oxide	5	5
Stearic acid	3	3
Sulfur	3	3
Dibenzo GMF*	6	6
Red lead	10	10
Process oil	5	5
Paraffin wax	5	5
Celite 205 AA*	48.5	48.5
Whiting	73.5	—
Clay (M-33)*	—	73.5

	Modulus			Modulus		
Cure, Min. at 300° F.	Tensile	(200%)	Elong.	Tensile	(200%)	Elong.
3	370	130	720	380	160	640
5	560	140	750	490	190	720
30	650	140	760	440	180	690

	Ozone Resistance, Minutes to Failure†	
3	85	60
5	180	Greater than 300
30	Greater than 240	Greater than 240

*For supplier see Table 14.
†Test as described in Table 10. Values for single specimens.

TABLE 12. EFFECT OF SOFTENERS ON OZONE RESISTANCE

	I	II	III
Butyl (GR-I)	100	100	100
Zinc oxide	5	5	5
Sulfur	1.5	1.5	1.5
Dibenzo GMF*	6	6	6
Red Lead	10	10	10
Clay (M-33)*	100	100	100
Stearic acid	—	3	—
Paraffin wax	—	—	5

		Modulus			Modulus			Modulus	
Cure, Min. at 287° F.	Tensile	(200%)	Elong.	Tensile	(200%)	Elong.	Tensile	(200%)	Elong.
40	580	55	700	480	90	620	610	70	710
60	300	55	780	440	90	610	510	60	720
80	370	130	510	300	120	530	450	130	590

	Ozone Resistance, Minutes to Failure† (60-Minute Cure)		
	110 to 210	Greater than 360	Greater than 360

*For supplier see Table 14.
†Test as described in Table 10. Values averaged for several specimens.

the average chemical unsaturation of the compound. This procedure also has the advantage of giving the higher state of cure associated with the more highly unsaturated butyl. Table 13 shows the effect of replacing various proportions of the butyl with Vistanex. It is seen that the ozone resistance becomes progressively better as more and more Vistanex B-100 is substituted for the butyl. The large improvement in going from 10 to 20 parts of Vistanex is especially noteworthy.

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Bibliography

(1) J. P. Haworth, F. P. Baldwin, *Ind. Eng. Chem.*, 34, 1301 (1942).
(2) L. B. Turner, J. P. Haworth, W. C. Smith, R. L. Zapp, *Ibid.*, 35, 958 (1943).
(3) F. P. Baldwin, L. B. Turner, R. L. Zapp, *Ibid.*, 36, 791 (1944).
(4) R. L. Zapp, *Ibid.*, 36, 128 (1944).
(5) R. F. Wilf, F. W. Gage, India Rubber World, 123, 565 (1951).

TABLE 13. EFFECT OF VISTANEX B-100 ON OZONE RESISTANCE

	I			II			III			IV		
Butyl (GR-I)	100			95			90			80		
Vistanex B-100*	—			5			10			20		
Zinc oxide	5			5			5			5		
Stearic acid	3			3			3			3		
Aluminum Hydrate C741*	66			66			66			66		
Celite 270*	45			45			45			45		
Process oil	5			5			5			5		
Paraffin wax	5			5			5			5		
Dibenzo GMF*	6			6			6			6		
Red lead	10			10			10			10		
Sulfur	3			3			3			3		
Cure, min. at 287° F.	Tensile	Modulus (200%)	Elong.	Tensile	Modulus (200%)	Elong.	Tensile	Modulus (200%)	Elong.	Tensile	Modulus (200%)	Elong.
20	710	220	760	630	200	730	640	220	750	600	210	750
40	580	200	720	650	200	760	650	160	710	610	170	750
60	610	170	690	670	220	720	720	220	740	680	170	750
	Ozone Resistance—Minutes to Failure† (20-Minute Cure)											
	30			90			120			1530		

*For supplier see Table 14.
†2- by ¼-inch dumbbells, 50% elongation in 0.015% ozone in air. Values averaged for 10 specimens.

TABLE 14

Compounding Ingredients	Suppliers	Gravity
Alkyl Phenolic (Amberol ST 137X)	Resinous Products & Chemical Co., Philadelphia, Pa.	1.04
Alon S	Godfrey L. Cabot, Inc., Boston, Mass.	3.6
Aluminum Hydaxte C730, C741	Aluminum Ore Co., Pittsburgh, Pa.	2.35
Bayol D and F	Stanco Distributors, New York, N. Y.	0.775-0.835
Bismate	R. T. Vanderbilt Co., New York	
Butoxy Ethyl Diglycol Carbonate (BXDC)	Columbia-Southern Chemical Corp., Pittsburgh, Pa.	
Butyl Cellosolve Pelargonate	C. P. Hall Co., Akron, O.	
Calcene ($CaCO_3$)	Standard Chemical Co., Akron, O.	2.7
Celite 270 and 205AA (diatomaceous earth)	Johns-Manville Corp., New York	2.1
Chloranil (Vulklor)	Naugatuck Chemical Division United States Rubber Co., New York	1.97
Cumate	R. T. Vanderbilt Co.	
Dibenzo GMF	Naugatuck Chemical Division	1.37
GMF	Naugatuck Chemical Division	1.21
Hi-Sil C (silica)	Columbia-Southern Chemical Corp.	1.95
M-33 Clay	Moore & Munger, New York	2.6
McNamee Clay	R. T. Vanderbilt Co.	2.6
Octadecylamine (AM1180)	Armour & Co., Chemical Division, Chicago, Ill.	0.844
Polyac	E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.	2.1
Purecal U ($CaCO_3$)	Wyandotte Chemical Corp., Wyandotte, Mich.	2.7
Rotax	R. T. Vanderbilt Co.	1.42
Saturated Resin Esters (Staybelite Ester Gums)	Hercules Powder Co., Inc., Wilmington	1.05
Selenac	R. T. Vanderbilt Co.	1.3
Silene (calcium silicate)	Columbia-Southern Chemical Corp.	
Suprex Clay	J. M. Huber Corp., New York	2.6
Tellurac	R. T. Vanderbilt Co.	1.44
Tetrone A	E. I. du Pont de Nemours & Co.	1.41
Triamyl Borate	Sharples Chemicals, Inc., Philadelphia	0.845
Tributoxy Ethyl Phosphate	Ohio Apex, Inc., Nitro, W. Va.	1.02
Vistanex B100	Enjay Co., Inc., New York	0.92
Whitetex	Southern Clays, Inc., New York	2.6

No attempt has been made to list all the suppliers of a material; the present list is impartially intended to serve those unfamiliar with these materials.

Summary

The article presents general information on the use of mineral fillers in butyl rubber. It discusses the ease of incorporation of a number of typical pigments and their effect on processing. Results are given for air, steam pressure, and non-pressure curing of these compounds. Combinations of accelerators and vulcanizing agents for specific purposes are disclosed. Special properties such as abrasion resistance, permeability to gases, low-temperature serviceability, and ozone resistance are individually treated.

(6) R. L. Zapp, E. Guth, *Ind. Eng. Chem.*, 43, 430 (1951).
(7) V. H. Vora, *Rubber Age (N. Y.)*, 71, 507 (1952).
(8) "Butyl Compounding and Processing Manual," Enjay Co., Inc., New York (1948).
(9) Compounding Research Report No. 14, United States Rubber Co., Naugatuck Chemical Division, Naugatuck, Conn. (1950).
(10) *Trans. Inst. Rubber Ind.*, 20, 101 (1944).
(11) *J. Rubber Research*, 19, 15 (1940).
(12) G. J. Van Amerongen, *Rev. gén. caoutchouc*, 21, 50 (1944).

Peptizers in Latex

A SERIES of experiments which confirmed the assumption that peptizers would plasticize rubber in the form of latex so as to yield latices showing more or less degradation was conducted by M. Conte at I.F.C.[1] Dispersions of naphthalene thiol (Du Pont RPA 2), xylene thiol (Du Pont RPA 3), and zinc pentachlorothiophenate (Farbenfabriken Bayer Renacit IV) were added to latex, and the mixtures were heated, coagulated, and dried at room temperature to prevent action of the peptizers during drying. The first results indicated that ammonia inhibited the action of peptizers so that further investigations included, besides studies of the effect of the amount of peptizer added and varying conditions of time and temperature, also the effect of the pH and the presence of ammonia ions. Tests on mixes of latex and xylene thiol revealed a decrease in oxidation power of the peptizer as the pH rose, and *vice versa*. It was shown that the decrease in pH which favors oxidation of the thiol also favors induced oxidation of the rubber; a pH of 4 and absence of ammonia ions provide the most favorable condition for oxidation.

Mooney viscosity measurements and Dufraisse manometer determinations of absorbed oxygen confirmed these findings. It is thought the oxidation of rubber in latex is caused by the same mechanism responsible for the action of peptizers on dry rubber on the mill.

Various uses for these "degraded" latices are suggested —to study chemical reactions of rubber, in emulsion, or to prepare more soluble rubber derivatives; they make excellent adhesives and are easier to use in certain direct applications either because of better adhesive properties, or molding is facilitated by the more plastic coagulum.

[1] *Rev. gén. caoutchouc*, 30, 4, 262 (1953).

The Material Laboratory-Admiralty Indentometer[1]

J. Z. Lichtman[2] and C. K. Chatten[2]

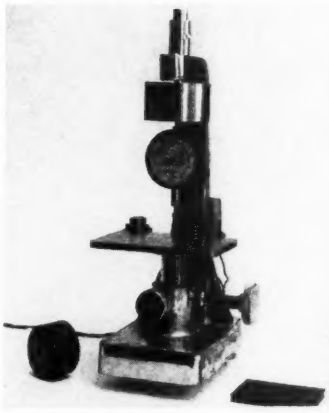

Fig. 1. Material Laboratory-Admiralty Indentometer

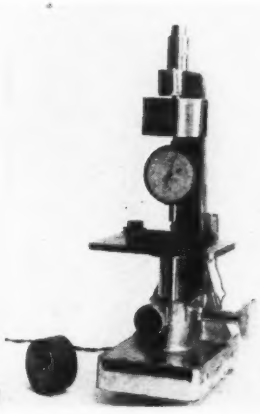

Fig. 2. Specimen under Minor Load

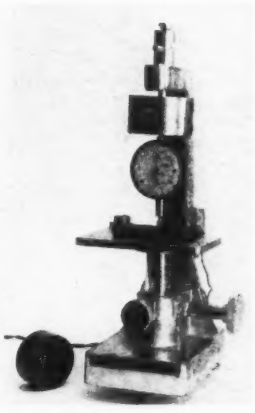

Fig. 3. Specimen under Major Load

THE hardness indentation of natural and synthetic rubber elastomer materials such as gaskets is one of the most frequently used indices of their suitability. Hardness is also used as an index of the resistance of elastomer materials to changes caused by exposure to various environments. Typical American instruments accepted as standard devices in evaluating hardness indentation include the ASTM hardness tester,[3] the Pusey & Jones plastometer,[4] the Shore type A durometer,[5] and the Rex gage.[5] Similar instruments have been developed and adopted in England,[6] differing from their American counterparts only in the magnitude of instrument components; the methods otherwise are alike.

Owing to the increased emphasis on the serviceability of elastomer materials at low temperatures the Material Laboratory initiated a progress of work late in 1945 with the objective of developing instruments and establishing standards for evaluating the low-temperature performance of elastomer end-items. A few standard low-temperature testing procedures have been developed based on recent investigations, and these procedures have been incorporated in military and other procurement specifications. For example, a specification for synthetic rubber gasket material now includes evaluation of hardness indentation and compression set at low temperatures, using procedures specifically designed for the purpose.[7]

Until recently the Pusey & Jones plastometer was the only dead load instrument in conformity with both federal and industrial specifications,[4, 7] for evaluating hardness indentation. However in view of the apparent merits of a British instrument, the Admiralty rubber meter,[6, 8] the Material Laboratory constructed a similar, but modified instrument designed to conform with the above specifications. The modified instrument is identified as the Material Laboratory-Admiralty indentometer in order to differentiate it from the Admiralty rubber meter. Since the indentometer has the same minor and major leads and same size and shape of indentor foot as the Pusey & Jones plastometer, the two instruments may be used interchangeably.

The Apparatus

The Material Laboratory-Admiralty indentometer is illustrated in Figures 1 through 5. It consists essentially of a constant load application and indentation measurement assembly suspended from a rigid cast-iron framework and an adjustable horizontal platform mounted directly below the indenting assembly. The ⅛-inch diameter spherical indentor attached to the lower end of the dial indicator, part *C*, Figure 4, is brought into contact with the upper surface of a specimen that is positioned on the platform as shown in Figure 2. The minor load acting on the indentor, owing to spring tension in the indicator and weight of the indentor stem, is 90 grams, and the major load consisting of parts *I* and *K*, Figure 4, is 1,000 grams. The degree of indentation of the specimen, owing to the application of the major load to the indentor, is measured by means of a dial indicator, part *C*, Figure 4, graduated to 0.01-millimeter. One revolution of the main pointer corresponds to 1 millimeter pin travel. The indicator includes a revolution counter and has a range of 10 millimeters. Friction in the instrument is largely overcome during a test by continuous operation of a small vibrator, part *E*, Figure 4, attached to the back of the casting, part *D*.

[1] The opinions or assertions contained herein are those of the authors and are not to be construed as reflecting the views of the Navy Department or the Naval Service at large.

[2] Material Laboratory, New York Naval Ship Yard, Brooklyn 1, N. Y.

[3] ASTM Standard Method D314-39. (American Society for Testing Materials, 1916 Race St., Philadelphia, Pa.)

[4] ASTM Standard Method D531-49; Federal Specification ZZ-R-601a, June 25, 1940 (Superintendent of Documents, Government Printing Office, Washington, D. C.); Bureau of Ships General Specification, Appendix I, Sept. 15, 1944. (Bureau of Ships, Navy Department, Washington, D. C.)

[5] ASTM Tentative Method D676-49T.

[6] British Standards Institution, Method No. 903-1940. (British Standards Institution, Publication Dept., 28 Victoria St., London S.W. 1, England.)

[7] Military Specification MIL-R-900A, Mar. 23, 1950. (Bureau of Supplies & Accounts, Navy Department.)

[8] "The Admiralty Rubber Meter." (Naval Ordnance Inspection Dept., Sheffield 9, England, Mar. 21, 1945.)

Material Laboratory, New York Naval Shipyard Final Report 4855-2, Aug. 30, 1949. Bureau of Ships Code 344, Navy Department.

J. Z. Lichtman, C. K. Chatten, *Anal. Chem.*, 24, 812 (1952).

The major load is applied to the tapered end of the indicator stem by downward helical movement of a sleeve support, part *J*, Figure 4. This sleeve is raised or lowered by guided movement of the knurled pin in the helical slot of a guide tube, part *H*, mounted above and concentric with the indicator shaft. Since the center of gravity of the major load is lower than the upper pointed end of the tapered extension of the indicator stem, as shown in Figure 5, the load is balanced on the stem in testing position. When raised from the indicator stem by rotation of tube *J*, the major load is supported on the shoulder of this tube. In this position the pin of tube *J* rests on the upper end of the helical groove of part *H*. No significant friction exists between parts *J* and *H* because of design clearances.

Accurate vertical alinement of the instrument is achieved by proper adjustment of two knurled leveling screws, part *B*, Figure 4, located under the rear of the casting. A fixed screw is located under the front center of the casting. A spirit level, part *A*, indicates the alinement of the instrument.

The position of the specimen platform is controlled by the locking screw *F*, and the elevating and lowering pinion *G*, which engages a rack in the platform support shaft. The cylindrical weight shown at the left of the instrument in Figures 1, 2, and 3 may be applied to the specimen concentric with the indentor if the specimen shows a tendency to be bowed away from the platform. This weight is 454 grams, and it has a flat specimen contact surface measuring 5/8-inch OD. by 3/8-inch ID.

Procedure for Use

A specimen is placed on the instrument platform and properly positioned under the indentor foot. The platform is then raised so that the specimen contacts the indentor, as shown by a slight movement of the indicator. The platform is then raised 3 millimeters further, as shown in Figure 2. The minor load due to the indicator spring tension is thus maintained constant in all determinations. After adjusting the dial zero to correspond to the pointer position, the major load is applied to the indentor shaft as described above, and the indentation is observed to the nearest 0.01-millimeter at 15, 30, or 60 seconds later as required. If the cylindrical weight shown in Figures 1, 2, and 3 is used in the tests, it is placed on the specimen while the platform is in the lowest position. The platform is then raised as described above; the specimen is shifted as necessary to permit the cylindrical weight to clear the indicator stem.

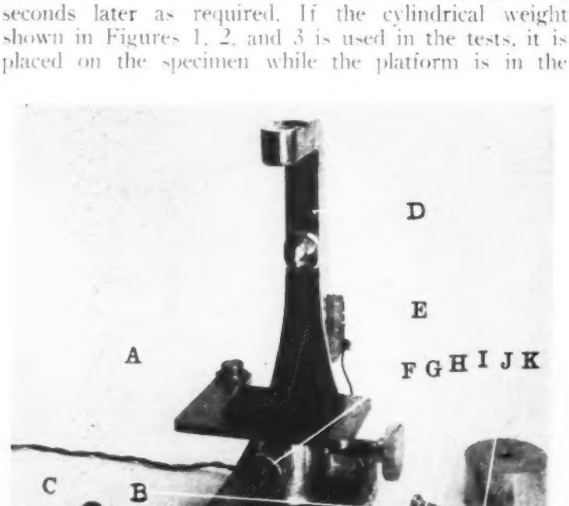

Fig. 4. Material Laboratory-Admiralty Indentometer, Disassembled

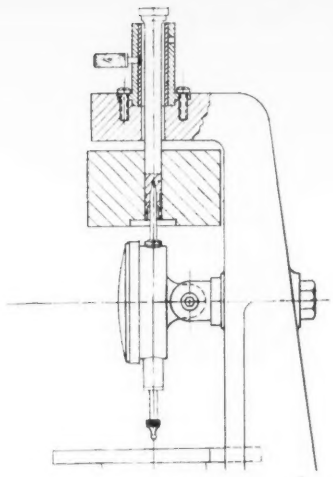

Fig. 5. Cross-Section Sketch of Major Load Application and Indentation Measurement Components

Conclusions

The indentation of an elastomeric specimen by an indentor acting under a constant load can be determined by means of the Material Laboratory-Admiralty indentometer at normal room temperatures and at low temperatures, accurately, rapidly, and without appreciable friction between the moving parts and without any undue impact on the specimen. The instrument is rugged in design, easy to manipulate, and is well adapted for evaluating the hardness of elastomeric materials, particularly at low temperatures.

Acknowledgment

The authors wish to acknowledge the collaboration of W. K. Gondek on the design modification of the Admiralty hardness meter and to thank T. A. Werkenthin, of the Bureau of Ships, Department of the Navy, Washington, D. C., for his continued interest and support of this work.

Thermal Insulating Material

A NEW quick-drying material, named Pyrolack, and described as a water-base inorganic compound which makes a treated metal surface capable of withstanding temperatures up to 5,000° F., has been announced by The B. F. Goodrich Co., Akron, O. Developed at the request of the United States Defense Department for use on rockets and guided missiles, the material is sprayed to a thickness of 1/16-inch on to the metal surface to be protected. This coating is claimed to be capable of withstanding flame temperatures for as long as 10 seconds. Pyrolock is also said to withstand indefinitely temperature cycles of −60° to +165° F. and to be resistant to most solvents and chemicals.

The new material is non-toxic, non-flammable, and non-explosive and will adhere directly to clean metal surfaces without sandblasting or use of priming surface preparations. Short of actual deformation of the coated metal, the dried layer of Pyrolock will not chip off from sharp impact.

Methods Employed in Compounding Research—XI[1]

Ingredients for Compounding Research

I. Drogin[2]

THE following installment continues the section on ingredients for compounding research which was begun in our December, 1952, issue. Part I of this series appeared in our October, 1952, issue.[3]

HIGH-PRESSURE STEAM PROCESS (PALMER PROCESS). The high-pressure steam process of reclaiming is distinctly a Xylos[5] process. It is also known as the Palmer process as it was developed and applied by Henry F. Palmer.[6] The process, according to Shaffer (233),[4] is used to devulcanize natural and synthetic rubber tire scrap as well as airbags and mechanical scrap, at low cost. The scrap is commonly ground to one mesh or finer; then it may be mixed with reclaiming oils as desired. This mixing is carried out in an open internal mixer.

A 300-pound charge of the mixed scrap is loaded into a cylindrical and cone shaped vessel, which has an eight-inch diameter loading hole in the top. Steam pressures of 800 to 1,000 psi. are generally used for periods varying from 45 seconds to seven minutes. The pressure is retained by a hydraulically operated valve in the conical bottom, and at the end of the heating period the pressure is instantaneously released, permitting all the scrap to be blown rapidly through the one- to two-inch orifice, causing the pieces to swell because of the pressure within them, and they are thus shredded and torn apart during the discharge. Because of the high temperature and shredding of the treated scrap, it has a fairly low moisture content and is easily dried. Finishing is done by the conventional straining and refining equipment. Because of the high temperature and pressure with resulting shredding during discharge, the amount of "tailings" is usually quite low, and refining rates are high.

The high-pressure steam process is especially suitable for scraps of natural or synthetic rubber compounds having either no fabric content or a low fabric content. Very satisfactory reclaims can be made using #2 peelings. Whole tire scrap can be processed also; some of the fabric is destroyed by hydrolysis, but the remainder is retained and mixed with the scrap during subsequent refining. Scraps need not be ground finally for use in this process; material that passes a one-mesh screen is quite satisfactory. Oils may be premixed with the scrap.

RECLAIMATOR OR "DIP PROCESS." The Reclaimator or "Dip process" (223), which is continuous, according to Augenstein (234) and Wettly (235), involved the development of suitable equipment which takes into account the discovery that vulcanized rubber scrap has a very sharp dip in Williams plasticity[7] values when heated for only a few minutes and then cooled under specified conditions. In practice, cracked scrap, defibered by mechanical means and air separation and very finely ground, is mixed with reclaiming agents and fillers and charged to the Reclaimator where, according to Plumb (236) and O'Connor (230), the finely ground scrap plus the chemicals is compressed by a continuously moving screw-type unit, where it is heated rapidly to about 350° F. and worked mechanically. Devulcanization occurs, and under the effects of pressure and closely controlled temperature the scrap rubber is converted to a soft plastic mass which is rapidly cooled and extruded from the Reclaimator, ready for refining by further working. One pass through a sheeting refiner, it is claimed, produces reclaimed rubber for shipment.

The Reclaimator is a long horizontal cylinder. Chambers around the space through which the rubber passes provide passage for heating and cooling medium. The outlet head is also provided with a similar arrangement. To maintain the proper temperatures the temperature of the oil-cooled feed section is controlled independently of the temperature of the water-cooled outlet end. Short stopping the reaction is done by extrusion through a cool die. This process has an advantage of low labor cost and of requiring less equipment. Reclaimator process reclaims are generally softer, more plastic, and can absorb more dry load than conventional types.

THE LANCASTER-BANBURY PROCESS. Another process for reclaiming rubber is the Lancaster-Banbury method which, according to Comes and Banbury (237) and to Comes (238), is a new mechanical process for reclaiming natural, GR-S, and butyl scrap at low cost. The process is covered by the Robinson and the Banbury, Comes, and Schnuck patents (224). The chief feature of this method is a newly designed size 3A Banbury rubber reclaimer and devulcanizer with Uni-drive, installed over a 60-inch mill and with a 24-inch and a 26- by 48-inch high-speed refiner adjacent to the mill.

The reclaimer is of sturdier construction than the standard Banbury mixer to enable it to handle the heavier load requirements. The basis of this process is placing the mass of stock to be reclaimed in a confined working space and subjecting it to intense shearing action by using heavy pressures and high power input.

As pointed out in U. S. Patent 2,461,192, vulcanized natural and synthetic rubber scrap are reclaimed by

[1] Based on a paper presented before the Ontario Rubber Section, C. I. C., Toronto, Ont., Canada, Mar. 11, 1952; The Los Angeles Rubber Group, Inc., Los Angeles, Calif., Apr. 1, 1952; and the Northern California Rubber Group, San Francisco, Calif., Apr. 10, 1952.

[2] Director of Research, United Carbon Co., Charleston, W. Va.

[3] The section below concludes the discussion of reclaimed rubber processes started in our September, 1953, issue.

[4] Numbers in parentheses refer to Bibliography items at the end of this installment.

[5] Xylos Rubber Co., a subsidiary of Firestone Tire & Rubber Co., Akron, O.

[6] Formerly with Xylos Rubber Co.; now vice president, Kentucky Synthetic Rubber Corp., Darien, Conn.

[7] ASTM D 926-47T.

grinding to 20-mesh size and mixing in a size 3A Banbury mixer at 70 r.p.m. A typical batch is: ground whole tire, 104 pounds; mill ends, 15.6; coal-tar oil or heavy pine tar oil, 15.6; resin tackifier, 5.2; and carbon black, 10.4 pounds. Pressure exerted by ram is 80 psi. The temperature rapidly rises to 510° F. in eight minutes. The rotor speed is then reduced to 14 r.p.m., and the batch is rapidly cooled to 350° F. in three minutes and sheeted out. Scorched rubber, morgue stock (partially cured stocks), and uncured scraps from making rubberized fabric (U. S. patent No. 2,461,193) are treated by the process described in U. S. patent No. 2,461,192.

This process, according to Ball (239), is well adapted to the reclaiming of "scorched" or partly vulcanized compounds because such compounds cannot be ground. Nitrile type rubbers and neoprene do not, as pointed out by Comes (238), respond too well to the high temperatures reached in this process.

Acid Process. A detailed description of this process is furnished again by Ball (226). This process is now used to a limited extent by some reclaimers to convert whole tire, pneumatic tire scrap, and boot and shoe scrap into reclaim with certain inert and dry qualities. To defiber the scrap, the finely ground material is digested for a period of about 4-10 hours with 10% sulfuric acid in lead lined tanks at approximately 200° F. (with the aid of steam). The acid is then removed by washing and riffling, and the washed defibered scrap is then neutralized with a dilute solution of caustic soda. The scrap still requires further devulcanization. This may be accomplished in the alkali digestion process or in one of the other processes. The scrap may be dried and then treated by the open steam process. Or before reaching the open steam process, the scrap may first be subjected to fine grinding or boiled in alkalies or other chemicals to produce certain desired effects. After the steam treatment a further washing may be given to remove soluble impurities or soaps formed during that treatment. The straining and refining operations are carried out in the same manner as in the alkali process.

In the case of tire scrap, after the acid digested scrap has been washed and dewatered, it is boiled in a 2% caustic soda solution for 2-3 hours, washed, dewatered, dried, ground, and devulcanized with 5-10% of oils, and from there on worked in the usual manner.

Boston Woven Hose Reclaiming Process. The principal features of the Boston Woven Hose & Rubber Co.'s reclaiming process are high pressure and high temperature, to destroy the fiber in a neutral cook, and also the use of a newly developed Mil-Strainer,[8] which is characterized by special features in the worm and liner. According to James C. Walton,[9] it is "a high-pressure neutral system" designed to produce a high-quality devulcanized rubber and GR-S. The process was installed this year in a new reclaiming plant which, according to John Bierer,[10] is "the latest in design, encompassing all the best known features of reclaiming systems to form the most modern, continuous digester process plant in the United States" (240).

The process is essentially an automatic system from the beginning to the end, starting with cracking, then air separation, digesters, washers, driers, mixer, Mil-Strainer and refiners, to the final finished reclaim. Whole tire, sponge shoe sole and red tube scrap are used. The scrap is ground in a giant cracker to about ¼-inch size in the case of whole tire, and about ⅜-inch size for other type of scrap. This is placed in a 3,500-gallon digester, holding normally a 7,500-pound charge (only 5,000 pounds in the case of sponge rubber). A straight neutral cook is used with no chemicals added. The fibers are destroyed at the high pressure and high temperature maintained in the digester. Direct steam at 300-310 psi. is supplied to the digester, and the pressure is allowed to build up to 380 psi. as a result of the decomposition of the fiber.

The cook, in the case of whole tire reclaim, is held at full temperature (420° F.) for three hours, and the time to bring to temperature is one hour. In the case of high styrene polymer reclaim, such as Neolite, a longer cooking time (4½ hours) and more oil are required; whereas, in the case of natural rubber scrap, like red tubes, the cook is maintained at only 200 psi. and for a shorter period. Generally speaking, the cooking time in the Boston Woven Hose process is shorter owing to higher temperature and pressure.

The devulcanized salvage is discharged from the digesters in the conventional "blow-down" procedure, washed, dewatered, and dried to 8-10% moisture in order to keep the stock cool during the subsequent processing. The dried stock is then compounded in a Day internal mixer[11] with 5-8% added material, and then processed through a Mil-Strainer where the batch is massed and converted into a homogeneous mass and then strained. It is then subjected, in the usual manner, to a preliminary refining, which is followed, in turn, by final refining on finishing mills.

The Mil-Strainer (241) is a standard rubber strainer of the quick-opening head type designed to provide additional milling action and high-volume straining. Its conical nose feed screw, in conjunction with the milling action, is said to increase the capacity by 25% or more over the standard rubber strainers of equivalent size. In the quick-opening type of strainer head used in the Mil-Strainer the strainer plate is larger in diameter than the nominal screw diameter, thereby creating a cone shaped cavity within the head casting. A uniform-diameter screw allows the stock to pile up in this cavity and stagnate. This condition is eliminated by the conical nose screw, which also utilizes the full area of the screens and strainer plate, thereby increasing output.

The Uniblend Process. The Uniblend process is, according to Traflet (242), a method of finishing reclaim by a machine developed cooperatively by Farrel-Birmingham Co.[12] and Pequanoc Rubber Co.[13] The machine, known as a "Blender," is somewhat on the principle of a continuous Banbury or a mill strainer. Devulcanized rubber scrap made by the digester, heater, or any other process is fed into the "Blender," and from the "Blender" is strained and then refined. The unique part about the machine is that after processing the material through it, an additional pass through a refiner produces a very smooth highly refined product. Conventional processes have always used a batching mill or a Banbury followed by a refiner before straining, and then finish refining; thus any coarse particles of dirt or sand which might remain in this stock would either be mashed or would go through the strainer and remain in the finished product.

In the Uniblend process the material is strained before any refining is done; consequently any material that ordinarily goes through the strainer is now caught and then removed. This process results in a cleaner finished product and one with more uniform physical properties. There is, of course, quite a saving in manpower, since all the operations are automatic, and the stock is not touched until it is finished. While other machines are on the market which are designed for the same work, they,

[8] National Rubber Machinery Co., Akron, O.
[9] Vice president, Boston Woven Hose & Rubber Co., Cambridge, Mass.
[10] President, Boston Woven Hose.
[11] J. H. Day Co., Cincinnati, O.
[12] Ansonia, Conn.
[13] Butler, N. J.

according to Traflet (242), apparently have thus far not equalled the results obtained with only one refining on the Uniblend.

THE DASHER PROCESS. This process, according to Dasher (243), is applicable to both uncured and cured scraps. Its basic function is the removal of cotton and rayon cord from uncured quality compounds. The process consists of granulating the scrap, feeding it to a fluidized chemical treating process (where the concentration of reagent, contact time, and temperature are rigidly controlled), and further grinding the scrap so that the depolymerized fiber is friable and is so pulverized and ground as to pass 100-mesh screen, while the rubber remains elastic and does not grind further at this step. At this stage the rubber particle, cured or uncured, is easily separated from the cellulose by air separators coupled with adequate screening equipment.

At the completion of this phase of the process the rubber compound is still fully active and may be cured without the addition of any accelerators, activators, sulfur, etc. The cellulose content is less than 2%, and the residual chemicals are less than 0.05% in the uncured compound. After the removal of the cellulose the uncured compound is sheeted for shipment; at this stage, however, if the sheeting operation is not necessary, the uncured compound is pelletized and readily handled through air systems. If the rubber is cured, then a mechanical reclaim process is employed. The Dasher process lends itself to custom processing services and also makes available to the trade recovered carcass and tread compounds, as well as recovered compounds from boot and shoe frictioned fabrics. The recovered compounds from the processing of uncured carcass compounds may be used as a direct replacement of the new compound in making new coated tire fabrics.

Application of Reclaim to a Tire

With reference to the application of reclaim to a tire, Thompson (219) has pointed out that by using reclaim in the cap to substitute softening oils a cap of superior quality is obtained which is characterized by cooler tubing and higher resistance to abrasion; likewise, the use of reclaim in the cushion to replace softening oils, leads to improved calendering and higher quality; the use of reclaim in sidewalls gives smoother extrusion, better molding, and superior flex life. The use of reclaim in the carcass improves the calendering, gives more building tack and lower heat build-up; finally, in the bead stock a higher loading is permissible with reclaim as compared to softening with oils.

Table of Commercial Reclaims

Type descriptions of 185 reclaims, comprising more than 90% of the marketed reclaims, are shown in Table 10 (244). They take into consideration (1) seven producers, viz., Dominion, Naugatuck, Midwest, Xylos, Pequanoc, U. S. Rubber Reclaiming, and Essex; (2) five manufacturing processes, viz., digester (alkali, neutral), pan (heater), Reclaimator (Dip), special, and acid; (3) seven main reclaim types, viz., whole tire, modified whole tire, tube, peel, carcass, mechanicals, and boot-shoe; (4) four main colors, viz., black, red, brown, and gray; (5) varied uses, viz., tires, soles, heels, mechanicals, general, extrusions, hard rubber cements, tubes, motor mounts, camelback, dispersions, wire insulations, battery boxes, adhesives, footwear, proofed goods, molded goods, mats, sponge rubber, and tapes. The specific gravity varies from 1.00 to 1.60, and the rubber hydrocarbon content from 32 to 85%.

The following chemical and physical data on reclaims are generally sought: acetone extract, ash, carbon black, rubber hydrocarbon, specific gravity, tensile strength, % elongation at break, hardness (Shore A), and Mooney viscosity.

A number of reclaimers make custom reclaims from scrap supplied by the customers.

TABLE 10. RECLAIMED RUBBER

Designation	Manufacturing Process	Scrap Grade	Color of Reclaim	Specific Gravity	RHC Content %	Recommended Use
			*Dominion Rubber Co., Ltd.**			
501	Heater	Tube	Red	1.24	59	Cement, tubes
502	Heater	Tube	Black	1.20	56	Cement, friction tape
503	Heater	Tube	Black	1.20	56	Tubes
505	Heater	Butyl tube	Black	1.16	55	Tubes
561	Heater	Blend	Light gray	1.27	59	Cements, adhesives
570	Heater	Blend	Red	1.50	48	General purposes
590	Digester	Unstrained tire tailings	Black	1.18	51	Mechanicals
591	Digester	Refined tire tailings	Black	1.18	51	Battery boxes, tires
658	Digester	Whole tire	Black	1.18	52	Tires, general purpose
670	Digester	Whole tire	Black	1.18	52	Tires, mechanicals
673	Digester	Tire	Black	1.25	47	General purpose
674	Digester	Tire	Black	1.24	43	Footwear, general purpose
680	Digester	Tire	Black	1.21	46	Extruded goods
			Midwest Rubber Reclaiming Co.			
B-10	Neutral	Whole tire modified	Black	1.27	40	Mats, hose, low cost mechanicals
15	Neutral	Whole tire	Black	1.18	49	Tire carcass friction
Butex	Neutral	Butyl tube	Black	1.14	57	GR-I compounding and butyl tubes
F-24	Neutral	Fiber bearing		1.31	48	Fiber source for light colored heels, soles, flooring
35	Neutral	Fiber bearing		1.29	40	Fiber source for heels, soles, flooring
M-52-E	Alkaline	Carcass	Black	1.22	60	Adhesives, dispersions
53-B	Alkaline	Carcass	Black	1.32	56	Mats, mechanicals, adhesives
62	Neutral	Whole tire	Black	1.18	52	Tires, general compounding
70	Neutral	Whole tire	Black	1.17	50	Tires
84	Neutral	Whole tire	Black	1.17	50	Smooth extrusion
119	Alkali	Inner tubes natural rubber	Red	1.22	60	Light-color mechanicals and cement stock
203	Neutral	Whole tire modified	Black	1.20	40	Smooth extrusion
303	Neutral	Whole tire modified	Black	1.25	46	Semi-hard, painted goods
400	Neutral	Whole tire modified	Black	1.29	42	Low-cost molded goods
461-Special	Neutral	Peel	Black	1.18	50	Camelback
482-K	Alkali	Whole tire modified	Black	1.25	45	Battery boxes, hard rubber goods
500	Alkali	Inner tubes natural rubber	Red	1.30	49	Cements, adhesives
514	Alkali	Inner tubes natural rubber	Black	1.20	57	General purpose RHC replacement
540	Alkali	Inner tubes natural rubber	Red	1.20	63	Cements, adhesives
542	Alkali	Inner tubes natural rubber	Red	1.18	61	Adhesives, sponge rubber
700	Alkaline	Carcass	Black	1.18	60	Dispersions and adhesives, tapes
772	Neutral	Low staining		1.18	49	White sidewall carcass compounds
999	Neutral	Tailings blend	Black	1.25	38	Low-cost mechanical blends
Midco B	Neutral	Whole tire	Black	1.18	50	Tires, general compounding
I	Neutral	Whole tire	Black	1.18	52	Tires, general compounding
S-201	Neutral	GR-S tube	Black	1.17	47	Extruded goods, asphalt dispersions

* Latex and reclaim division, 550 Papineau Ave., Montreal, P.Q., Canada.

Table 10 (*Continued*)

Naugatuck Chemical Division, United States Rubber Co.†

Designation	Manufacturing Process	Scrap Grade	Color of Reclaim	Specific Gravity	RHC Content %	Recommended Use
301	Alkali	Tube	Black	1.18	60	General purpose, tires
315	Neutral	Tube	Black	1.21	54	Footwear, proofed goods
330	Alkali	Tube	Red	1.18	62	General purpose, tubes
331	Neutral	Tube	Black	1.20	58	General purpose, tubes
343	Neutral	Butyl tube	Black	1.16	54	Butyl compounds
404	Heater	Blend	Black	1.40	40	Molded goods
619	Digester	Tire	Black	1.25	47	Extruded goods, mechanicals
623	Digester	Whole tire	Black	1.22	48	Insulated wire
626	Fine ground	Tread	Black			Molded goods
632	Digester	Whole tire	Black	1.21	49	Insulated wire
635	Digester	Tire	Black	1.21	48	Soles, heels
637	Digester	Whole tire	Black	1.17	52	Non-staining compounds
639	Special	Tire	Black	1.23	45	Molded goods
640	Special	Tire	Black	1.23	46	Molded goods
646	Digester	Tire	Black	1.26	46	Calendered and extruded goods, mats
658	Digester	Whole tire	Black	1.17	50	Tires, general compounding
670	Digester	Whole tire	Black	1.17	50	Tires, general compounding
676	Digester	Whole tire	Black	1.17	50	Low-staining molded goods
678	Digester	Tread	Black	1.17	50	Treads and high abrasion goods
			Xylos Rubber Co.			
A-11	Alkali	Tube	Black	1.18	52	Mechanicals
291	Neutral	Mechanical	Black	1.36	36	Extruded goods
792	Neutral	Mechanical	Black	1.45	34	Mats
5366	Neutral	Tire	Black	1.18	48	General purpose
5469	Alkali	Carcass	Black	1.18	52	Dispersions, mechanicals
B-215	Neutral	Mechanical	Black	1.35	38	Flaps
407	Alkali	Tube	Red	1.19	58	Cements
748	Alkali	Tube	Light	1.36	40	Mechanicals
755	Alkali	Carcass	Black	1.18	51	Dispersions
760	Alkali	Carcass	Black	1.17	52	Dispersions
763	Neutral	Mechanical	Black	1.30	44	Extruded goods
961	Neutral	Tire	Black	1.20	45	Low-stain mats
982	Neutral	Mechanical	Black	1.31	44	Mechanicals
1059	Alkali	Carcass	Gray	1.22	52	Friction tape, adhesives
1076	Alkali	Carcass	Gray	1.25	52	Adhesives
1080	Alkali	Tube	Red	1.20	58	Cements
S-270	Pan	Butyl tube	Black	1.15	51	Butyl compounds
556	Neutral	Tire	Black	1.22	49	Extruded products
700	Neutral	Tire	Black	1.24	38	Mechanicals
714	Neutral	Tire	Black	1.23	48	Battery boxes
754	Neutral	Neoprene	Black	1.37	32	Neoprene compounds
866	Pan	Butyl tube	Black	1.16	51	Butyl compounds
880	Neutral	Tread	Black	1.18	47	Camelback
193	Neutral	Tire	Black	1.18	45	Tires
1289	Alkali	Tire	Black	1.23	41	General purpose
1819	Neutral	Mechanica	Black	1.41	36	Mechanicals
2815	Neutral	Tire parts	Black	1.23	42	Hose
3708	Alkali	Tube	Black	1.17	50	Mechanicals
3800-Crumb	Neutral	Tread	Black	1.17	56	Mechanicals
4100-M Lt.	Alkali	Mechanical	Light	1.40	46	Mats
4874	Alkali	Carcass	Gray	1.20	53	Cements
4924	Neutral	Tire parts	Black	1.20	55	Extruded products
4969	Alkali	Tailings	Black	1.20	45	Molded and mechanicals
5214	Alkali	Tire	Black	1.22	43	Molded goods
5228	Neutral	Tire	Black	1.19	54	Low-stain hard rubber
5242	Neutral	Tire	Black	1.18	49	Tires
5298	Alkali	Tire	Black	1.23	46	Battery boxes
5363	Neutral	Tire	Black	1.19	46	Mats, mechanicals
5387	Alkali	Tube	Black	1.19	53	Sponge
5391	Alkali	Carcass	Black	1.18	50	Dispersions
5448	Alkali	Tube	Red	1.19	56	Mechanicals, mats
5485	Alkali	Tire	Black	1.17	45	Tires
5601	Neutral	Tire parts	Black	1.23	42	Friction compounds
			Pequanoc Rubber Co.			
Aurora	Acid	Tire	Black	1.18	50	Extruded goods, wire insulation
Bond	Neutral	Tire	Black	1.23	43	Battery boxes
Calumet	Acid	Tire	Black	1.17	50	Extruded goods, wire insulation
Champion	Neutral	Tread	Black	1.18	50	Camelback, molded goods
Comet	Acid	Tire	Black	1.18	50	Extruded goods, wire insulation
Eclipse	Alkali	Carcass	Black	1.18	57	Cements, dispersions
Jersey	Acid	Carcass	Black	1.07	66	Hard rubber
Moccasin	Neutral	Tire parts	Black	1.24	44	Extruded goods, hose
Mustang	Alkali	Tire parts	Black	1.22	57	Cements, dispersions
Paralite	Pan	Floating	Brown	1.00	85	Hard rubber
Planet	Pan	Tube	Black	1.19	56	Mechanicals
Red Star	Pan	Tube	Red	1.19	62	Mechanicals
Ruby	Pan	Tube	Red	1.30	55	Jar rings
Tomahawk	Alkali	Tire	Black	1.18	53	Molded goods
Wigwam	Neutral	Neoprene	Black	1.40	42	Neoprene compounds
150	Neutral	Tire	Black	1.40	34	Calendered goods, footwear
400	Neutral	Blend	Black	1.32	40	Mats, mechanicals
1100	Alkali	Tire	Black	1.19	50	Dispersions
1225	Alkali	Tire	Black	1.18	50	Tire carcass
1300	Neutral	Tire	Black	1.21	45	Mechanicals
1350	Neutral	Tire	Black	1.21	45	Mechanicals
1375	Neutral	Tire	Black	1.21	45	Mechanicals
1500 (NS)	Neutral	Tire	Black	1.18	53	Tires
1550 (Low Stain)	Neutral	Tire	Black	1.17	51	Tires
1800	Neutral	Tire	Black	1.17	50	Camelback, tires
2250	Neutral	Tube	Black	1.19	44	Friction tape
2400	Acid	Tire	Black	1.18	50	Extruded goods, wire insulation
2500	Neutral	Tire	Black	1.18	50	Sidewalls
3508	Neutral	Tire	Black	1.23	43	Hard rubber, battery boxes
3550	Neutral	Tire	Black	1.25	40	Mats
3600	Neutral	Tire	Black	1.21	45	Extruded goods
W	Neutral	Tire	Black	1.21	45	Wire insulation
3650	Neutral	Tire	Black	1.21	47	Extruded goods
3900	Neutral	Tire	Black	1.18	50	Mats
3901	Neutral	Tire	Black	1.18	50	Mats
4800	Alkali	Tube	Red	1.18	60	Cements, dispersions
5000	Pan	Floating	Brown	1.00	85	Hard rubber
5400	Alkali	Tube	Black	1.18	60	Cement, dispersions, sponge
5900	Neutral	Tube	Black	1.15	58	Wire insulation
5950	Neutral	Tube	Black	1.18	55	Air bags, mechanicals, tubes
5975	Neutral	Tube	Black	1.18	55	Mechanicals, tubes
7090	Neutral	Tire parts	Black	1.24	44	Extruded goods, hose
8579	Acid	Carcass	Black	1.07	66	Hard rubber
10736	Alkali	Tube	Red	1.18	60	Cement, dispersions

†Elm St., Naugatuck, Conn.

Table 10 (*Concluded*)

Designation	Manufacturing Process	Scrap Grade	Color of Reclaim	Specific Gravity	RHC Content %	Recommended Use
			U. S. Rubber Reclaiming Co.‡			
Bison	Digester	Tube	Black	1.20	51	Cement, sponge, tape
Black Oak	Pan	Tube	Black	1.25	49	Extruded goods, jar rings, tubes
R-300	Reclaimator	Whole tire	Black	1.16	52	Battery boxes, hard rubber, plumbers specialties
350	Reclaimator	Whole tire	Black	1.14	46	Extruded goods, footwear, proofed fabrics, wire insulation
351	Reclaimator	Whole tire	Black	1.18	48	Belt and tire carcass, general purpose, tires
500	Reclaimator	Tread	Black	1.17	47	Battery boxes, belting, camelback
550	Reclaimator	Tread	Black	1.14	46	Camelback, sidewalls, tread
575	Reclaimator	Tread	Black	1.18	48	Camelback, hard rubber, heels, soles, sidewalls, tread, undertread
600	Reclaimator	Tube	Red	1.15	62	Sponge, cement, colored goods, hose, tubing, mats
650	Reclaimator	Tube	Black	1.14	62	Cement, sponge, tubes
750	Reclaimator	Butyl tubes	Black	1.13	59	Airbags, cements, butyl tubes
900	Reclaimator	Tire	Black	1.17	46	Battery boxes, camelback, heels, soles
Red Oak	Pan	Tube	Red	1.30	49	Tubing, jar rings, extruded goods, colored goods, hose
U-1-7715	Special	Butyl tubes	Black	1.15	59	Airbags, butyl tubes, cement
UM-9818	Special	Neoprene	Black	1.32	42	Neoprene compounds
U. S.-140	Neutral	Tire	Black	1.19	45	Heels, soles, tires
1016	Neutral	Tire	Black	1.22	40	Extruded goods, footwear, proofed goods
2013	Neutral	Tire parts	Black	1.37	42	Footwear, proofed goods
2017	Neutral	Whole tire	Black	1.19	45	Belt and tire carcass, general purpose, tires
2021	Neutral	Tire	Black	1.19	51	Hard rubber, mechanicals
2026	Neutral	Tire	Black	1.18	51	General purpose, mechanicals, tires
2532	Alkali	Whole tire	Black	1.24	41	Battery boxes, hose, tubing, mechanicals
2534	Alkali	Whole tire	Black	1.22	44	Battery boxes
3013 (NS)	Special	Tire parts	Black	1.16	55	Tire carcass
3022	Neutral	Carcass	Black	1.16	51	Dispersions, mechanicals, sponge
3506	Alkali	Carcass	Black	1.19	56	Sponge
4506	Alkali	Carcass	Gray	1.40	49	Mats, tape
4536	Alkali	Carcass	Gray	1.21	59	Adhesives
5215	Pan	Blend	Black	1.25	38	Extruded goods, hose, tubing
7527	Pan	Tube	Red	1.21	58	Colored goods
7537	Pan	Tube	Red	1.20	59	Cement, colored goods, sponge
7717	Pan	Tube	Black	1.19	53	Hard rubber, tubes
8025	Pan	Mechanicals	Gray	1.28	50	Colored goods
9218	Special	Tire	Black	1.21	40	Battery boxes, general purpose, mats
9710		Soling	Oak	1.60	35	Colored goods, heels, soles, mats
9711	Pan	Floating	Brown	1.40	50	Colored goods, heels, soles, mats, mechanicals
			Essex Rubber Co.§			
S-1320	Pan	Natural tube	Black	1.21	58	Extruded goods, heels
1390	Pan	GR-S tube	Black	1.28	47	Extruded goods
V-188	Neutral	Whole tire	Black	1.18	50	General purpose
191	Neutral	Whole tire	Black	1.21	46	General purpose where fiber content is desirable

‡P. O. Box 365, Buffalo 5, N. Y. §P. O. Box 501, Trenton, N. J.

Addenda

Two sections, one on Nitrazole CF-type butadiene-styrene polymer and one on Hycar OS-10, were inadvertently left out of the section on "Special Synthetic Rubbers" and are therefore presented herewith. EDITOR.

Nitrazole CF—GR-S Type Polymer

Nitrazole copolymer, a development of Firestone Tire & Rubber Co., under the government synthetic rubber program, is, according to Willis, Alliger, Johnson, and Otto (245), a GR-S type of copolymer containing a ratio of 70 to 30 parts of butadiene and styrene prepared with a stabilized salt of diazotized p-nitroaniline (Nitrazole CF) as the initiator at 122° F. This product, when tested in tires, showed tread wear approximating that of 41° F. GR-S. The physical properties of a laboratory Nitrazole tread stock prepared at 122° F. are equal to those of 41° F. GR-S and are superior to regular or 122° F. GR-S. The improved properties of the Nitrazole CF rubber appear to be the result of increased linearity and less cross-linking in the polymer chain together with an improved molecular weight distribution.

Gelation studies by Alliger, Cook, and Wolfangel (246) of 41° F. GR-S and Nitrazole CF initiated (122° F.) polymer as a result of high-temperature mastication show that 41° F. GR-S gels less readily than Nitrazole CF polymer, but the Mooney plasticity which rises sharply with the formation of large amounts of gel in 41° F. GR-S remained constant or decreased as gelation occurred in Nitrazole CF polymer. These basic differences in the two polymers result in different processing characteristics.

Privately Produced Butadiene-Styrene Rubber

Privately produced butadiene-styrene rubber, as distinct from high styrene copolymer resins where the styrene content is more than 50%, is made by B. F. Goodrich Chemical Co. and is known as Hycar OS-10 (247).

Hycar OS-10 is called a modified butadiene-styrene copolymer, but is not to be confused with GR-S, as it is reported to be a distinctly different material. The dried sheets are similar in appearance to a natural light-amber crepe rubber, and the specific gravity of the crude polymer is 0.98. It contains a non-discoloring antitoxidant and has excellent storage stability.

Hycar OS-10 is easy processing, and breakdown occurs readily on the mill. Compounding techniques closely resemble those for natural rubber and the same vulcanizing agents, accelerators, softeners, pigments, and other ingredients may be used. The stocks can be molded, extruded, calendered, and otherwise fabricated and cured on the same machinery and equipment as used for natural rubber. This synthetic rubber is particularly adaptable to the continuous vulcanization processes used in the wire covering industry. Excellent and useful cements may also be made.

Although Hycar OS-10 is oil soluble, as the designation "OS" implies, its vulcanizates are less affected by oils and greases than are equivalent natural rubber vulcanizates. The compounds are resistant to ketones, alcohols, and glycols, and have resistance to water ab-

sorption better than for comparable stocks of natural rubber, an important feature in wire and cable use. The volume resistivity of typical compounds is as high as 5 x 10^{15} ohms per cubic centimeter at 67° F. and 5 x 10^{13} ohms per cubic centimeter at 194° F. The dielectric strength is 750 volts per mil; the dielectric constant is 2.9 at 60 cycles, and the power factor 0.005 at 60 cycles.

Vulcanizates of Hycar OS-10 have very good heat aging properties and are little affected by temperatures of 212° F. and perform creditably at temperatures of 250° F. Low-temperature flexibility is satisfactory at -40° F.

Vulcanizates of Hycar OS-10 are superior to equivalent natural rubber compounds in resistance to oxidation, ordinary aging, and sunlight and are about equal in tear and abrasion resistance and compression set. Lupke rebound is inferior to that of natural rubber and comparable to that of Hycar OR-15.

Hycar OS-10 is compatible with natural, nitrile, and other butadiene-styrene rubbers. It is particularly useful for blending with Hycar OR-15 to produce compounds to meet narrow limits of swell and shrinkage as required in many specifications.

An excellent grade of hard rubber can be made with Hycar OS-10, and these stocks are especially useful in the manufacture of abrasive wheels.

A Powdered Form of Reclaimed Rubber

The announcement of the availability of another powdered form of reclaimed rubber was made after the above section on this type of rubber was on the press. EDITOR.

A powdered form of reclaimed rubber called Flo-Mix (248) is now also being offered by U. S. Rubber Reclaiming Co. The new material is claimed to be particularly suited for use in tires, battery boxes, molded mechanical goods, footwear, and industrial belting. The regular types of reclaimed rubber are now shipped in slabs, but Flo-Mix, the company says, can be shipped in tank cars and automatically conveyed from the car to the point of use in the customer's plant. This new material can also be shipped in bags of uniform weight.

Bibliography

(233) Personal communication from C. R. Shaffer, president, Xylos Rubber Co. (Feb. 26, 1953).

(234) "Dip Process of Reclaiming." *Rubber Age (N. Y.)*, Apr., 1949, p. 63.

(235) "Le Dip Process." *Rev. gén. caoutchouc*, Mar., 1952, p. 192.

(236) "New Reclaimed Rubber Process Demands Automatic Temperature Controls." *Taylor Technology*, Winter, 1951, issue. Taylor Instrument Cos., Rochester, N. Y.

(237) "Lancaster-Banbury Method of Devulcanizing Scrap Rubber." *Rubber Age (N. Y.)*, Aug., 1946, p. 563.

(238) "High-Quality Reclaim Obtained at Low Cost with New Mechanical Process." India RUBBER WORLD, May, 1951, p. 175.

(239) "Miscellaneous Reclaiming Processes," pp. 120-26 in "Reclaimed Rubber."

(240) "Boston Woven Hose New Reclaim Plant." *Rubber Age (N. Y.)*, Mar., 1953, p. 770.

(241) "Mixer—Extruders," pp. 181-85 in "Machinery and Equipment for Rubber and Plastics."

242) Personal communication from F. E. Traflet, Pequanoc Rubber Co. (Apr. 10, 1953).

(243) Personal communication from P. J. Dasher, president, Dasher Rubber & Chemical Co. (June 15, 1953).

(244) Data from "Reclaimed Rubber Brand Names and Trade Designations," pp. 670-78 in "Rubber Red Book." *Rubber Age*, New York (1951). Also, "Reclaimed Rubbers," pp. 569-74 in "Compounding Ingredients for Rubber," Second Ed. India RUBBER WORLD (1947).

(245) "Preparation, Properties, and Evaluation of Diazo-Initiated Polymers." India RUBBER WORLD, Oct., 1952, p. 87.[24]

(246) "Gelation of 41° F. GR-S and Nitrazole CF Initiated (122° F.) Polymer as a Result of High Temperature Mastication." *Ibid.*, May, 1953, p. 215.[24]

(247) "Hycar Synthetic Rubber Blue Book." B. F. Goodrich Chemical Co., Rose Bldg., Cleveland, O.

(248) India RUBBER WORLD, Sept., 1953, p. 812.

[24] Abstract.

(To be continued)

Molded Vinylite Dies

RESILIENT, flexible stamping dies for producing sharp, clear impressions on regular or irregular surfaces are being molded of Vinylite resins by Krengel Mfg. Co., Inc., New York, N. Y. The resistance of the vinyl to acids allows the dies to be used for permanently stamping metals and other non-porous materials with acid etching inks. Another advantage claimed for dies made of this material is that up to three times the depth of cut obtainable on ordinary stamps is possible; this allows the stamp to be cleaned of heavy base inks less often than shallow faced stamps. The Vinylite resin used is a product of Bakelite Co., division of Union Carbide & Carbon Corp., New York.

United States Rubber Co.'s Special Christmas Ball Packages (*Left to Right*): U. S. Royal Balls in Strong, Plastic Putting Cup; U. S. Royal Balls in Practical Plastic Container; and U. S. Ensolite Practice Golf Balls in Seasonal Package

Swim Accessories

A LOW priced swimming accessory line has been announced by Martin Rubber Co., Long Branch, N. J., to complement its more expensive King Neptune line of fins, masks, and goggles. Known as Rocket accessories, the new products are of the same variety as the older line and feature junior and senior sized goggles, shatterproof lens for the masks and goggles, and adjustable swim fins.

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Editorials

Will an Adequate Future Program of Fundamental Research on Synthetic Rubber Be Provided?

WE HAVE been very gratified by the interest aroused by our series of editorials on the future of research on synthetic rubber. Because of the number and the length of the replies received to our requests for opinions from leading research directors and workers in the industry, we are devoting in this issue two pages instead of one page to these replies and our comment.

In addition to the above-mentioned replies, your editor visited the National Science Foundation, the National Bureau of Standards, and the Reconstruction Finance Corp., in Washington, D. C., in August, and talked with men active and interested in rubber research for many years. The suggestions and recommendations of this group will be provided in the near future.

A further sampling of industry opinion from men active in scientific and technical work in rubber was possible at the meeting of the Division of Rubber Chemistry of the American Chemical Society in Chicago, Ill., September 9-11. The need of thought and action by the rubber industry at its highest management levels was emphasized by the decision of A. C. S. Rubber Division to abandon its recently organized Library, editorial support for which appeared on this page in October, 1952. Lack of interest and the lack of suggestions for adequate financing on a continuing basis were given as the reasons for discontinuing the library service. It is likely that the second reason was more important than the first, and that this central industry library, which among other things was organized because "many projects in connection with rubber literature research have needed doing for a long time, but have languished because no group was available to handle them," needs even greater support from top management in the rubber industry and its supplier companies, in the same manner as does the future planning for basic rubber research.

The rubber industry has demonstrated most emphatically in the recent past that it is a growth industry. The sales value of its products is at present more than $5 billion a year, and an industry of this size has certain responsibilities, not only to itself and to the country from a national security standpoint, but to its customers and the lay public. A definite plan for future basic research on rubber, of which a central industry library is a necessary adjunct, are part of these responsibilities.

Research Institute or Continued Government Program?

Returning to the replies received from the technical men in the industry, Reply Number Four was from a former research worker in the industry, now retired, but still active in rubber science and technology. He said, in part:

"It is very important that fundamental research be continued. This can be done by a continuance of the university and institute programs or by the formation of a rubber research institute. Publication of the results is important and necessary, and such programs would publish their results. Either method could be handled by a small group, probably in Washington, just as at present. The cost could be paid for by the government or by assessing a tax on the synthetic rubber product.

"Some of the men in the government program have been in it for ten years, and this experience is necessary and desirable. Research groups cannot be built up over night because the problems are too big and time is required.

"The petroleum industry has the Petroleum Institute and the paper industry the Institute of Paper Chemistry, and these are supported by industrial companies."

Private Industry Research Adequate?

Reply Number Five from the research director of a small rubber company stated that industry research will include an adequate amount of the basic type, but is not sure of the value of a central research institute. Some of his comments follow:

"When plant disposal takes place, the problem of rubber research is a big one. With the plants in private hands there will no longer be the exchange of information that now exists, under government auspices, between the various industrial contractors in the industry.

"This means that in order to be progressive, more money must be spent than has been spent by RFC. I think the rubber manufacturers recognize this. In my talks with various people on this subject the best guess that I can make is that after plant disposal the rubber industry will spend between $13 million and $15 million per year on synthetic rubber research. This will be approximately twice the amount spent under RFC auspices.

"In spite of many statements to the contrary, I believe that the rubber industry recognizes, only too well, the role of fundamental research in technical progress. Industry has spent, for years, much time and money in this field. Some of the work has been done in its own organization and some has been contracted to universities. If the expenditures for research are increased to the extent indicated above, the proper proportion will continue to be devoted to fundamental work.

"The so-called fundamental research being done by the universities under RFC auspices has been of mixed quality. Some of it has been of very high quality and

some of it has not been of high grade. Many people have had the belief that a portion of the money has not been used wisely.

"I believe that after plant disposal, private industry will take over university research that is of good quality both because it is desirable, and therefore should be done, and because by using the universities they overcome to some extent the manpower limitation. Some of the projects probably will not be taken over, but, on the other hand, I anticipate that new projects will be started.

"I believe that the rubber industry, in sponsoring university research, will place minimum restrictions on such work. Industry will ask only that assignments be made of patentable inventions to the company sponsoring such work. Complete freedom of publication will be permitted after patent requirements are covered.

"My feelings on a central research institute are rather mixed. It would be a nice idea in many respects and might prove of value to the rubber industry. As in all research the direction may be the largest single controlling factor in success or failure. We have plenty of illustrations of other industries in this country having research institutes, but I am not sure how well they work out."

Basic Research Not Always First

Reply Number Six from the research director of one of our large rubber companies points out that basic research sometimes results from applied research rather than *vice versa* and takes the position that there would be no reduction of effective research from both the fundamental and applied standpoint under private industry. He said, in part:

"I am probably out of step with many of the research and development people in the country in that I do not feel that the government program has been particularly effective for several years. It has been my feeling that they have operated on the policy of appropriating money at a rather high level with no solid program either of research of a fundamental nature or of the applied type. In my opinion, if results are desired, no matter whether it is applied or fundamental research, a rather definite objective and approach are necessary. In the second place a unified governmental program removes the competitive urge and to the extent that the effectiveness of the program is lost other than as it is properly set up and is properly and closely followed.

"It is very strong in my opinion that research activity cannot be measured in the numbers of dollars that are being spent. The number of dollars that should be spent should bear a relationship to the effective ideas in front of the development group. . . .

"I would certainly say that it is my experience that even with the hard riding company that we are in, that there has been little difficulty in securing funds for those fundamental studies as can be interpreted into data or information which will lead down the road to a development approach with some hope of attaining commercial advantage. Likewise we have not been too unsuccessful in securing financial support of fundamental projects which are useful only to teach us more about the industry to which we belong. The difference I believe between the way the government and the industry have spent money on items of this type is that the latter usually makes a fairly clear and careful appraisal of the outcome of a specific topic. The government program has at times followed a course lacking in such analysis. . . .

"A lot of people seem to think everything develops in a very orderly fashion going through basic research after which an applied research program comes along and makes commercial the outcome of the basic research work. . . . In most commercial operations there is a certain amount of art. There are put into commercial processes improvements and new items arrived at not only from the old art but from basic research. In other words, the three things become intermingled and, in fact, to such an extent that the basic research which teaches what is going on may even come last. . . .

"Many comments have been made that we are borrowing all of our fundamental research from foreign countries. There is no question but that we have borrowed a large amount. Likewise, there is no question in my mind but that the foreign countries borrow from this country. From some first-hand examination of the situation, it is my studied opinion that the situation in foreign countries with reference to applied and fundamental research is little different than it is in this country. I believe the situation will take care of itself if left to a truly competitive industry.

"The idea of a Research Institute as a way of providing an assurance for a certain amount of fundamental work to go forward has, of course, been advanced through the industry for well over 25 years. As far as I am aware, there is no opposition on the part of the industry to such a move. The main question always becomes one of finance and continuing support. . . . I do not believe that each of the rubber companies would be willing to leave their future in the hands of the fundamental work that might be carried on by an Institute and, therefore, consider that they would hesitate to make a long-term financial commitment to support its work. If provision for support through a tax on rubber or some such move were made, then the set-up of the Institute becomes one outside of the active interests of the rubber companies. As to whether it then becomes an effective operation is to a large extent dependent on specific administration set up for it."

As we said last month, this is one of the most important questions facing the rubber industry today. Expressions of opinion from our readers will be welcomed since a decision not only by the Rubber Facilities Disposal Commission but by the industry itself, must be made in the next several months.

R. G. Seaman

Multi-Screw Extrusion of Rigid Vinyls[1]

S. H. Greenwood[2]

RIGID vinyls, as herein discussed, consist of polyvinyl chloride resin, stabilizer, lubricant, and, in many cases, a color pigment, but do not contain any plasticizer. The material is commercially available today in granular and pre-blended powder forms and is extruded into rods, tubes, sheets, channels, moldings, and numerous other sections. It is the purpose of this paper to describe some of the more important techniques for extrusion of rigid vinyl by means of the meshed multi-screw extruders.

Some of the present applications for rigid vinyls include pipe for corrosion resistant service; insulating tubes; and rigid sheets fabricated into fume hoods, ducts, and tank linings. The plastic is also being used for hot-water standpipe service, in various gas installations, and in sheeting for post forming.

A promising field for vinyls is in pipe liners which can be extruded to a size slightly less than the inside diameter of the pipe they are to line, and are then mandrel-fitted to the pipe.

It is conservatively estimated that the demand for rigid pipe, valves and fittings, and other products, including structural shapes, will increase enormously within the next few years. An estimate has been made that structural shapes made of rigid PVC will be taking 100,000,000 pounds of resin annually within the next five or 10 years.

The following are advantages for rigid vinyls:

(1) They are practically unaffected by all acids, alkalies, and salts, and by chlorine, oil, grease, alcohol, and carbon tetrachloride. They are also highly resistant to oxidation.

(2) Physical properties are good; tensile strength is often as much as 8,600 psi.; impact strength is 0.55 inch-pounds (notched Izod); and Rockwell "R" hardness is 105-110.

(3) The vinyls can displace or replace several other materials that are in short supply.

(4) Specific gravity is about 1.4, and weight about one-fourth that of steel, to result in lower shipping costs. Supporting members, although closer spaced than supports for steel pipe, are much lighter in total weight.

(5) Heat resistance is good, as compared with vinyl copolymers. Rigid vinyls will burn, but are self-extinguishing when the flame is withdrawn.

(6) These vinyls have excellent dielectric properties.

(7) The vinyls are available in a full color range, as well as in clear transparent for thin sections.

(8) Rigid vinyls are easily bent or formed by heating with a hot air gun and can be machined, welded, and cemented. Heat, butt, or friction welding can be used. Molded fittings are available. There are also successful techniques which employ solvent joining.

(9) The material offers great possibilities for alloying with other thermoplastics to give a variety of physical properties, although often at some sacrifice in chemical resistance.

Current limitations of the rigid vinyls are few and will probably be of less importance in the future. These limitations are:

(1) The heat distortion point is 170° F.

(2) The load limit is relatively low as compared with steel; for example, a rigid vinyl pipe of one-inch I.P.S. size has a safe limit for continuous operation of 300 psi.

(3) The coefficient of expansion is several times that of steel.

(4) Rigid vinyls are swollen by aromatic chlorinated hydrocarbons, esters, ethers, and ketones.

Meshed Multi-Screw Extruder

The meshed multi-screw extruder, as exemplified by the Stokes-Windsor machines, has been found exceptionally well adapted for the extrusion of rigid PVC. The basic operating controls for this extruder are the three proportioning types of pyrometers; one for barrel temperature control, another for the die adapter, and the third for the die itself. A handwheel gives manual control of screw speed, as indicated by a tachometer mounted on the front panel of the base. On the RC-100 machine, for example, screw speed can be varied over a range from 6-18 rpm. Other manual controls include the feed regulator and the variable-speed motor control. The latter, together with the interrelated pulling mechanism, is simultaneously controlled by the operator. The accurate control of these elements of the extruder is most important to successful operation.

The two intermeshing screws of a Stokes-Windsor extruder are shown in Figure 1. The screws are divided into three sections, each with different diameters and thread pitches. The pitches of the mating flights on each screw are the same, thereby permitting the screws to turn in the same direction from feed end to die end while the root diameters increase. The pitch varies in each of the three flights; the longer pitch is at the feed end. The tolerances between the thread faces of mating flights and the tolerances between the outside diameter of the screws and the barrel are each only a few thousandths of an inch.

Figure 2 shows the construction of the volumetric feeding unit which is geared directly to one screw pinion so that a change in screw speed will result in a proportional change in feeding rate. The feeder is simple in operation and designed so that it can be dismantled readily for cleaning. A spring loaded safety clutch dis-

[1] Presented before the National Technical Conference, Society of Plastics Engineers, Inc., Boston, Mass., Jan. 23, 1953.

[2] F. J. Stokes Machine Co., Philadelphia 20, Pa.

connects the feed drive, if oversized particles of plastic should jam in the rotating metering chamber, and so prevents any possible damage to the driving mechanism.

While water cooling of the screw and/or barrel is the generally accepted practice with single-screw extruders, it should be noted that on multi-screw extruders neither the screws nor barrel is water cooled. Experience to date on processing rigid vinyls indicates that such water cooling is not necessary. Screws and barrel have been cored for water cooling, however, for processing rubber and non-plastic materials where frictional heat build-up has been excessive.

Table 1 shows estimated outputs and horsepower requirements for typical single screw extruders and multi-screw extruders. The figures for single screw machines were taken from manufacturers' literature and are averages for different types of machines.

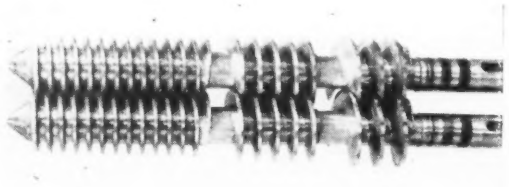


Fig. 1. Intermeshing Screws of a Stokes-Windsor Extruder

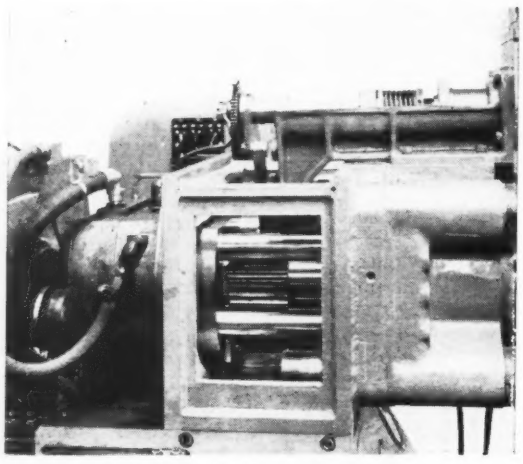


Fig. 2. Volumetric Feeding Unit of Stokes-Windsor Extruder Is Geared Directly to One Screw Pinion and Is Easily Dismantled for Cleaning

TABLE 1. COMPARISON OF SINGLE AND MESH MULTI-SCREW EXTRUDERS

SINGLE-SCREW EXTRUDERS

Screw Diameter, In.	Average Output, Lbs./Hr.	H.P. Requirements
2½	60-90	7½-10
3½	Up to 150	20
4½	150-350	40-50

MESHED MULTI-SCREW EXTRUDERS

Stokes-Windsor Model No.	No. of Screws	Screw Diameter at Output End, In.	Average Output, Lbs./Hr.	H.P. Requirements
RC-65	2	3.15	65-95	5
RC-100	2	3.6	100-160	10
RC-200	3	4.33	200-300	18

Operating Principles

In principle the meshed multi-screw extruder operates like a constant volume pump. A great advantage is that the material in process can never seize to the screw, revolve with the screw, or back up, since the pressure of two or more series of intermeshing screw flights revolving in the same direction forces the material forward. The positive displacement principle of the screws coupled with the volumetric controlled feeder results in uniform delivery of the material from the die orifice and close dimensional control of the extruded part. Pulsation is reduced to a minimum.

The intermeshing screws also give excellent compounding and fluxing action. Some operators are using the meshed multi-screw extruder for compounding and pelletizing rigid vinyl preblend powder in preparation for the extrusion of rigid shapes. Although considerable work is still to be done, present indications are that with further refinements in extrusion techniques and possible formulation changes, direct extrusion from unplasticized PVC in powder form is feasible with this type of equipment. This will mean, of course, that Banbury mixing and milling will not be required, and only modest in-plant preblending equipment will be needed. These factors are fine incentives for accelerated development work.

Meshed multi-screw extruders are being used successfully with plasticized vinyl preblended formulations where compounding, color dispersion, and final extrusion are done in one pass.

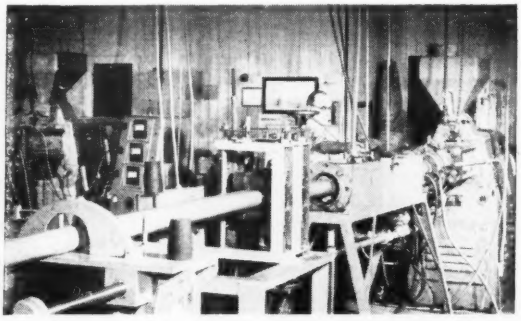


Fig. 3. Typical Take-off Installation for Extruded Rigid Vinyl Pipe Includes Cooling Tank, Pulling Device, and Cut-Off Saw

It can be noted in Table 1 that horsepower requirements for the Stokes-Windsor machines are quite low in comparison to those for single-screw machines of similar output. These lower requirements are based on two factors: (1) high machine efficiency, as expressed in terms of volumetric displacement of the meshed screws; and (2) there is no problem of frictional heat dissipation owing to the low speed of the meshed screws, and the horsepower is actually being used to flux and propel the material forward.

One of the major problems in the extrusion of rigid PVC is to raise the extruder temperature high enough to heat the material thoroughly, yet still avoid the decomposition resulting from excessive heating. The processing temperature band for this material is relatively narrow. This problem is minimized by the meshed multi-screw extruder because the material is steadily and uniformly heated and forced through the barrel to the die at a controlled rate to assure complete compounding and fluxing without decomposition.

It may be of interest to comment on another result obtained with intermeshed screws. At the completion of a rigid vinyl extrusion run the screws are continued in operation after the feed has been closed down. This action results in an almost complete purging of the screws and greatly simplifies cleaning. Some current users have perfected their techniques to such a degree that, upon completion of an extrusion run, they are able to remove the die, barrel, and adapter plate, clean these members and the screws, and then reassemble the machine all within a period of 10 minutes.

Any one directly associated with extrusion knows the basic operator requirements for successful and continuous operation. The importance of having well-trained, competent extrusion operators should not be minimized. With the principles incorporated in the meshed multi-screw extruder, however, it is a fair statement to note that personnel can be trained for this type of equipment in a shorter period of time because of the relatively simple temperature and extrusion controls.

Die Design

Since every person experienced in extrusion work has his own ideas about die design, no hard and fast rules will be given here. The following comments are based on observations made while working with multi-screw extruders. At the same time, it should be noted that the design principles for single-screw extrusion dies are quite similar to those recommended for multi-screw extruders.

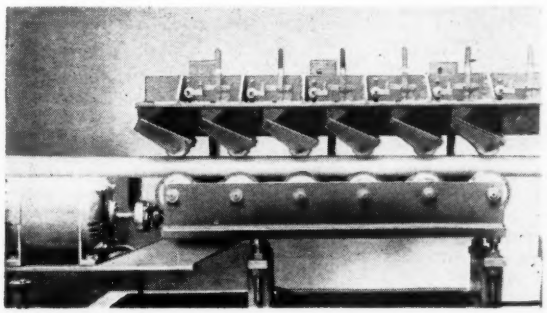


Fig. 4. Positive Pulling Device for Extruded Rigid Pipe Has Six Sets of Traction Rollers

One of the foremost facts is great emphasis on streamlining of the die itself. Every effort should be made to design the die so that there are no hold-up points to create eddy currents or turbulent flow in the material being extruded. Chrome plating of the dies for rigid PVC is highly desirable. This plating not only protects the contact surfaces of the die, but is also highly effective in transmitting a good finish to the extruded article.

It is important to design the die so that there is a gradually decreasing cross-sectional area from the inlet to the outlet of the die. Another major factor is the need of eliminating any sharp angles inside the die. Most of the experience to date indicates that a breaker plate and screen packs are not required with the meshed multi-screw extruder for processing compounded vinyl in granular form. When preblended powder material is being processed, breaker plates and a screen pack are desirable.

The sizing of rigid PVC pipe is being done currently by two methods: one by the use of a forming box, and the other using a swaging or sizing die. In the first method, air at approximately 3-10 psi. pressure is introduced through the die spider and mandrel and forces the pipe against the forming box. Water is circulated constantly through the jacketed former to give the pipe an initial skin cooling; while final cooling is accomplished in the cooling tank. This method requires plugging of the pipe to maintain the necessary internal pressure and is used mainly for the extrusion of thin-wall rigid pipe.

With the second method, using a swaging die, the extruded pipe is drawn down to the desired final size. This swaging die is a few thousandths of an inch larger in diameter than the desired finished pipe size to allow for contraction of the pipe during cooling.

Take-off Equipment

It may be of interest to describe briefly a typical rigid PVC pipe take-off system, consisting of a cooling tank, pulling rolls, and cut-off saw (see Figure 3). The cooling tank shown is approximately 10 feet in length. When a forming box is employed, rubber seals are used at both ends of the trough. When a swaging or sizing die is used, the swaging ring is mounted on the entry end of the cooling tank. The tank is designed for easy mounting of swaging dies.

Figure 4 shows the positive pulling device which consists of six sets of traction rollers with medium soft serrated treads. These rollers are adjustable to fit pipe from 1-6 inches in outside diameter. The pipe is held on the traction wheels by spring loaded jockey rollers which can be independently loaded. Each wheel is positively driven by a worm from a common worm shaft which is, in turn, driven by stepped V-belt pulleys from a variable-speed motor. Actual take-off speeds can be varied from just less than ⅓ up to 11 feet per minute, and cover pipe from 1-6 inches in diameter and of any reasonable wall thickness. Non-standard speeds can be obtained by using special V-belt pulley drives from the motor.

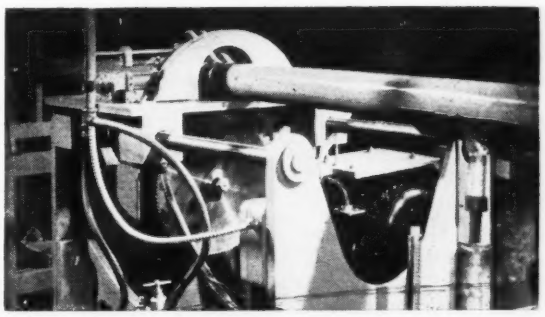


Fig. 5. Automatic Cut-Off Saw for Rigid Pipe Is Actuated by Microswitch

The cut-off device, shown in Figure 5, consists of an 18-inch diameter saw having a peripheral speed of 6,000 feet per minute, and driven by a three-horsepower fan-cooled motor. The entire cut-off assembly is mounted on a movable platform which uses ground and hardened rods as its ways. The moving pipe trips a micro-switch to start the following sequence of operations: a clamping device grips the pipe securely; the saw blade moves forward and cuts the pipe; and the clamp releases and the saw returns to its original position, ready for the next cut.

Summary and Conclusions

In conclusion, it is significant to note again the marked interest and growing demand for rigid PVC. The background of varied installations being gained in this country, to say nothing of the years of experience on the Continent, indicates that this material is establishing a firm position in the thermoplastics field. The meshed multi-screw extruder has been found to be especially suitable for use with rigid PVC and is expected to contribute greatly to future expansion of this material.

Acknowledgments

I would like to offer my sincere thanks to the following members of the SPE professional activities committee who contributed materially to this paper: Robert Bukey, Firestone Plastics Co.; Lee Samler, National Plastic Products Co.; and Tom Winstead, Hedwin Corp.

Meetings and Reports

Vinyl-Metal Laminates

A METHOD of laminating Marvinol vinyl plastic to sheet steel or aluminum to give a product which combines the strength of metal with the color range and corrosion resistance of vinyl has been developed by Naugatuck Chemical Division, United States Rubber Co., Rockefeller Center, New York 20, N. Y.

The laminate is made by rolling rigid or semi-rigid Marvinol sheet on to heated, adhesive coated metal sheets or strips. After rolling, adhesion is effected in seconds under heat lamps or other suitable heat source. The secret of the process lies in the special adhesive employed and the proper preparation of the metal and the plastic. The process is said to be adapted easily to high-speed production for fabricating either continuous rolls or individual panels. To date, cold rolled steel, hot rolled pickled steel, and aluminum from 18-34 gage have been used to make the laminate, while the vinyl films used have ranged from 0.002-0.02-inch thick.

Tests on the finished laminate, which is named Marvinol-Metal Laminate, indicate an adhesion in excess of 40 pounds per square inch of width, and this high adhesion permits the laminate to be fabricated on all types of standard metal forming equipment without damage to the plastic coating. The laminate can be sheared, drilled, or punched without chipping, and crimp rolls, 90-degree crimp bends, 180-degree bends, and deep draws can be made without damaging the coating. Soldering, welding, or brazing cannot be performed without removing the coating for a short distance on either side of the seam.

Joints and exposed metal at cut edges can be protected by various means, including use of pressure-sensitive tape and the application of coatings of high molecular weight Marvinol resin in special solvents. Tests indicate that even if the coating is cut or worn through, the metal will not necessarily rust because the adhesive and prebonding treatments act as corrosion deterrents. A patent has been applied for on the laminating process, and Naugatuck intends to make the process available to industry.

SPE Sections Meet

Chicago Groups Gather

THE Midwest Chapter of the Society of Plastics Industry and the Chicago Section of the Society of Plastics Engineers held a joint meeting on September 16 at the Western Society of Engineers Bldg., Chicago, Ill. A total of 110 persons participated in a cocktail hour and dinner which preceded a talk by Elmer E. Mills, Elmer E. Mills Corp., on the problems which may be encountered in plastic bottle production.

Mr. Mills discussed various methods of manufacturing these items and described some of the problems inherent in the production methods. He cautioned that numerous patents applying to the various processes and to the products have been obtained, a situation that requires careful attention from any company intending to enter the field.

In another address, William Cruse, vice president of the SPI, spoke on the place of the Society in the plastics industry.

CALENDAR

Oct.	16.	New York Rubber Group. Henry Hudson Hotel, New York, N. Y. Boston Rubber Group, Boston, Mass.
Oct.	20-21.	Rubber Section, N. S. C. Conrad Hilton Hotel, Chicago, Ill.
Oct.	21.	Washington Rubber Group. Washington, D. C. New York Section, SPE. Hotel Gotham, New York, N. Y.
Oct.	23.	Akron Rubber Group. Panel Meeting. Mayflower Hotel, Akron, O.
Oct.	27.	Association of Consulting Chemists & Chemical Engineers, Inc. Twenty-fifth Anniversary and Annual Meeting. Hotel Belmont Plaza, New York, N. Y.
Oct.	28-30.	American Management Assn. National Manufacturing Conference. Bellevue-Stratford, Philadelphia, Pa.
Nov.	9-12.	Refrigeration & Air Conditioning Exposition, Cleveland, O.
Nov.	13.	Philadelphia Rubber Group. Poor Richard Club, Philadelphia, Pa.
Nov.	18.	Washington Rubber Group. Washington, D. C. New York Section, SPE. Hotel Gotham, New York, N. Y. Scrap Rubber & Plastics Institute, NAWMD. Hollywood Beach Hotel, Hollywood, Fla.
Nov.	19.	Rhode Island Rubber Club. Metacomet Golf Club, East Providence, R. I.
Nov. Dec.	30-1.	Rubber & Plastics Division, A.S.M.E. Annual Meeting. Hotel Statler, New York, N. Y.
Nov. Dec.	30-5.	Exposition of Chemical Industries. Commercial Museum and Convention Hall, Philadelphia, Pa.
Dec.	11.	New York Rubber Group. Christmas Party. Henry Hudson Hotel, New York, N. Y. Boston Rubber Group. Christmas Party.
Dec.	12.	Southern Ohio Rubber Group. Christmas Party. Miami Valley Country Club.
Dec.	15.	Buffalo Rubber Group.
1954		
Jan.	22.	Philadelphia Rubber Group. Poor Richard Club, Philadelphia, Pa.
Jan.	25-28.	Plant Maintenance & Engineering Show. International Amphitheatre, Chicago, Ill. Conference at Hotel Conrad Hilton, Chicago.
Jan.	27-29.	Society of Plastics Engineers. Tenth Annual Technical Conference, Royal York Hotel, Toronto, Ont., Canada.
Jan.	29.	Akron Rubber Group. Panel Meeting. Mayflower Hotel, Akron, O.
Feb.	2.	The Los Angeles Rubber Group, Inc., Hotel Statler, Los Angeles, Calif.
Feb.	4.	Northern California Rubber Group.
Feb.	10.	Newark Section, SPE, Military Park Hotel, Newark, N. J.

New York Section Meets

THE New York Section, SPE, began the new season with a dinner-meeting on September 16 at the Gotham Hotel, New York, N. Y., attended by some 75 members and guests. Following the custom of previous years, the session was the annual business meeting at which all members can express their opinions about Section activities. President Saul Blitz, Tico Plastics, Inc., presided and introduced the other officers, directors, and committee chairmen. Reports were heard from the latter, with each report followed by an open discussion. Much interest was displayed in the discussion of future meeting programs, and it was decided to initiate a series of plant trips as part of the program.

Guest of honor at the meeting was P. J. Underwood, the new SPE executive secretary, who spoke briefly on the Society's aims and plans and the functions of the national office. A feature of the meeting was the first public announcement, made by William Lewi, Dusal Tool & Mold Co. and Section secretary-treasurer, of a new process for extruding phenolics developed by Ionia Mfg. Co., Ionia, Mich. Samples of typical extrusions were displayed and aroused great interest among the audience.

The final event on the program was a showing of the Eastman Chemical Products Co. color-sound film, "The Story of Tenite," which illustrates the preparation, processing, properties, and applications of the material. Earl Dudney and Tom Loveless, both of Eastman, were present to answer questions. Table favors were distributed through the courtesy of R. C. Molding, Inc., and the meeting closed with a drawing for door prizes contributed by Brilhart Plastics Corp.; Hercules Powder Co.; and Naugatuck Chemical, United States Rubber Co.

Reinforced Plastic Pipe

CERTAIN patents and inventions relating to the manufacture of glass reinforced plastic pipe have been acquired from Gustin-Bacon Mfg. Co., Kansas City, Mo., by Minnesota Mining & Mfg. Co., St. Paul, Minn. The two companies will also cooperate in research and development work concerned with perfecting and improving the pipe and a line of fittings and couplings for use with the pipe. Manufacturing and selling of these materials will be begun by 3M as soon as development has been completed and production equipment is available, and by Gustin-Bacon at a later date.

Plastics Development Plant

Koppers Co., Inc., Pittsburgh, Pa., plans to construct a plastics development plant at the site of the company's present chemical facility at Kobuta, Pa. The new plant will produce semi-commercial quantities of a wide variety of new plastics for use in various industrial and consumer goods applications. In addition, several new products will be manufactured in quantities sufficient to satisfy commercial orders.

Scientific and Technical Activities

New Officers Announced; Haynes Retires as Secretary at Chicago Meeting of Rubber Division, A. C. S.

THE Division of Rubber Chemistry of the American Chemical Society, in its third meeting in 1953, at the Hotel Sherman, Chicago, Ill., held as a part of the one-hundred-and-twenty-fourth meeting of the Society, had a registration of 800 members and guests. In his remarks at the opening of the first technical session of the Rubber Division meeting on the afternoon of September 9, the Division chairman, Seward G. Byam, E. I. du Pont de Nemours & Co., Inc., said that he was gratified that his call for papers for the three meetings held during the year had been answered so satisfactorily.

Special features of this meeting, in addition to the Goodyear Medal Award to John T. Blake, Simplex Wire & Cable Co., were a special tribute paid to "Charlie" Haynes, Binney & Smith Co., who retired as secretary after seven years of service, the luncheon meeting of the 25-Year Club, the interest and discussion of most of the papers presented, announcement of the election of new officers and directors, and the program for the wives of members.

Abstracts of the papers presented were published in our August issue, and some further comment will be made on some of these papers in this report. In addition, a number of papers presented before other Divisions of the Society considered to be of interest to members of the rubber and associated industry will be noted.

25-Year Club Luncheon

H. A. Winkelmann, Dryden Rubber Division, Sheller Mfg. Corp., was chairman of the luncheon meeting of the 25-Year Club at Chicago. After welcoming the Club members to Chicago, he introduced those members of the Club residing in the Chicago area.. D. Parkinson and F. J. Tiebenham, both of Dunlop Rubber Co., Ltd., Birmingham, England, were also introduced, as was Harry L. Fisher, president-elect of the Society, Mr. Byam, and Dr. Blake.

Dr. Winkelmann expressed his gratitude and that of the members of the Club for the printed booklet listing the names and affiliations of the members which had been prepared and distributed by Chas. Baldwin, United Carbon Co.

E. B. Curtis, R. T. Vanderbilt Co., announced that the next meeting of the Club would be held at the time of the Division meeting in Louisville, Ky., in April, 1954, and that Al. Brandt, B. F. Goodrich Chemical Co., would be the chairman for that 25-Year Club meeting.

New members of the Club were asked to stand, followed by those with varying years of service in the industry until the member with the longest service who had not previously been so honored at a 25-Year Club meeting was determined. The honor at the Chicago meeting went to Frank Malm, consultant, for his 46 years in the industry, and he was presented with a memento of the occasion.

The Technical Sessions

An interesting method of determining sulfur solubility in rubber by the use of the radioactive S-35 isotope was described by I. Auerbach, Goodyear Tire & Rubber Co., at the first session on the afternoon of September 9. One of the practical results of this work was proof of less blooming of sulfur from stocks containing rubber process oil.

John M. Ball

W. R. Smith, Godrey L. Cabot, Inc., showed how heat treatment of reinforcing carbon black reduced the modulus without reducing abrasion resistance of tire tread stocks. This effect on abrasion resistance is being checked with road tire tests.

The work on adsorption of iodine and bromine by carbon black by D. Parkinson showed that there was no chemical reaction between the black and the rubber and that unsaturation in carbon blacks is not a factor in rubber reinforcement.

Extensive data on factors important in the extrusion of compounds containing carbon blacks was reported by I. Drogin, United Carbon, and this paper contained practical advice on precautions necessary to obtain the best results in extruding compounds of various types.

The hitherto incompletely explained mechanism of the vulcanization of Thiokol-type polymers such as Thiokol FA was reported by E. M. Fettes, Thiokol Corp., at the morning session on September 10.

Some interesting properties of a new, unvulcanized composition of a new type of styrene resin and a chloroprene rubber were explained by R. J. McCutcheon, Goodyear chemical division. High impact strength and resistance to temperature were reported for this composition.

A better method of evaluating the aging properties of latex foam rubber that showed improved correlation with service life was described by T. H. Rogers, of Goodyear.

A paper on the load-carrying capacity of latex foam rubber by J. A. Talalay, Sponge Rubber Products Co., was presented by his son, Anselm Talalay. Equations relating foam density to the weight of foam rubber cushions and showing how the weight of a foam rubber item can be reduced by increasing cored areas, within limits, were included in this paper.

The Goodyear Medal Award Lecture by Dr. Blake entitled "The Future of Rubber" was presented as the last paper on the morning of September 10. The Lecture will be published in the November issue of India RUBBER WORLD, following publication in *Chemical & Engineering News*.

At the third session on the morning of September 11, R. W. Brown, United States Rubber Co., described a new polymerization recipe for LTP GR-S containing an organic hydroperoxide, sodium formaldehyde sulfoxylate, and an iron salt complexed with ethylene diamine tetra-acetic acid that reduced polymerization time and speeded production, if equipment for removing the excess heat generated were available. Improved GR-S latices can also be produced with this recipe.

Considerable further information on chlorosulfonated polyethylene was presented in three papers by R. H. Sudekum, F. F. Holub, and G. H. Bowers, all of du Pont. Solution coatings, blends with nitrile type rubbers, and adhesives for chlorosulfonated polyethylene were the subjects of these papers.

At the final technical session on Friday morning, the retiring chairman, Mr. Byam, turned over the meeting to the new chairman, James C. Walton, Boston Woven Hose & Rubber Co., for the last paper on the program. At that time Mr. Walton took the occasion to express his appreciation and that of the other officers, directors and members for the fine job done by Mr. Byam during the year as Division chairman.

Technical Sessions—Other Divisions

Several papers presented before other Divisions of the Society are thought to be of interest to the readers of India RUBBER WORLD. The titles and authors of some of these papers are given below, together with the Division before which they were presented. Abstracts of these papers appeared in the booklet available from the A. C. S. News Service at the meeting and also from 1155 Sixteenth St., N.W., Washington, D. C. Also, inquiries made to the editorial offices of the Society should mention papers by title and indicate authorship, divisions before which presented, and program number.

DIVISION OF CHEMICAL LITERATURE. "The New Patent Law," Robert Calvert, 155 E. 44th St., New York, N. Y. "The Literature of Carbon Black," Hanna Friedenstein and Barbara M. Davis, Godfrey L. Cabot, Inc., Cambridge, Mass. "How to Locate and Obtain Government Information Reports," Patricia L. Brown, Ethyl Corp., Detroit, Mich.

DIVISION OF CHEMICAL MARKETING AND ECONOMICS. "Latex-Base Paints," N. E. Van Stone, Sherwin-Williams Co., Cleveland, O. "Role of Market Surveys," Peter G. Peterson, Market Facts, Inc., and University of Chicago, Chicago, Ill.

DIVISION OF GAS & FUEL CHEMISTRY. "The Oxidation of Carbon Black," W. D. Schaeffer, W. R. Smith, M. H. Polley, Godfrey L. Cabot, Inc.

DIVISION OF INDUSTRIAL & ENGINEERING CHEMISTRY. "Suspension Copolymerization

Chem. Eng. News Photo

John T. Blake Receives the Goodyear Medal from Division Chairman Byam. On the Right Is Chairman-Elect John C. Walton, Who Spoke on "The Accomplishments of the Medalist"

of Vinyl Chloride and Vinyl Acetate," S. G. Bankoff and E. J. Emmer, Rose Polytechnic Institute, Terre Haute, Ind., and B. F. Goodrich Chemical Co., Cleveland, O. Also, a number of papers were presented in a "Symposium on Fluorine Chemistry."

DIVISION OF PAINT, PLASTICS & PRINTING INK CHEMISTRY. "Theory of Adiabatic Extruder Operation," James M. McKelvey, du Pont, Wilmington, Del. "Formulation and Manufacture of Interior Flat Latex-Emulsion Wall Paints," Joseph P. Davis, Goodyear, Akron, O. "Development of Scrub-Resistant Intumescent Coatings Based on Synthetic Latex," I. J. Cummings, Dow Chemical Co., Midland, Mich. "Some Fundamental Aspects of Filler Utilization," R. K. Witt and E. P. Cizek, Johns Hopkins University, Baltimore, Md. "Heat Resistant Polyesters," W. Cummings and M. Botwick, U. S. Rubber, Naugatuck, Conn.

DIVISION OF PETROLEUM CHEMISTRY. "Scope and Growth of the Petrochemicals Industry," R. L. Bateman and J. A. Field, Carbide & Carbon Corp., New York, N. Y. "Conservation of Butylenes in Butadiene Manufacture," Charles R. Noddings, S. B. Heath, and J. W. Corey, Dow Chemical.

DIVISION OF POLYMER CHEMISTRY. "Reaction of Diisocyanates with Polyhydroxy Compounds," H. L. Heiss, J. H. Saunders, Marjorie Morris, B. R. Davis, Edgar E. Hardy, Monsanto Chemical Co., Anniston, Ala. "Cross-Linking in Isoprene Polymerization," Maurice Morton, J. A. Cala, and I. Pilrma, University of Akron, Akron.

The Business Meeting

At the business meeting of the Division held the morning of September 10, Chairman Byam first called for a report of the membership committee. J. J. Hoesley, Goodyear, chairman of that committee, stated that between October, 1952, and September, 1953, a total of 213 new members had been added to the Division. Of these, 199 were regular members and 14 were associate members. During the same period, 235 did not continue their memberships.

The results of the elections for new officers and directors of the Division were given by M. E. Lerner, *Rubber Age*, chairman of the tellers committee. Chairman in 1954 will be James C. Walton. Vice chairman for the coming year is John M. Ball, Midwest Rubber Reclaiming Co., and secretary is Arthur M. Neal, du Pont. Amos W. Oakleaf, Phillips Chemical Co., will continue as treasurer.

The unsuccessful candidate for vice chairman, G. A. Cuthbertson, U. S. Rubber, will be a director-at-large.

New directors elected at Chicago from the areas of the sponsored rubber groups for a two-year term were as follows: Connecticut, George R. Sprague, Sponge Rubber Products Co.; Detroit, William J. Simpson, Chrysler Corp.; Northern California, Robert D. Ford, Mare Island Naval Shipyard; Philadelphia, T. W. Elkin, Armstrong Cork Co.; Rhode Island, Francis W. Burger, Kleistone Rubber Co.; Southern Ohio, James R. Wall, General Motors Corp.; and Washington, D. C., Richard E. Harmon, Connecticut Hard Rubber Co.

Mr. Byam then reported further on the work of the committee headed by A. E. Laurence, Phillips Chemical, on the planning of the place and time of future meetings. There will be two meetings in 1954, one in Louisville, Ky., April 14 through 16, and the other in New York, September 15 through 17. In 1955 there will be a meeting in Detroit, Mich., May 4 through 6, and a second meeting in Philadelphia, Pa., November 2-4. In 1956 a meeting is planned with the Rubber Chemistry Division of the Canadian Institute of Chemists in Montreal, P. Q., May 16 through 18, and in Atlantic City, N. J., September 19 through 21. In 1957, a meeting will be held in Cleveland, O., during the first half of the year and in New York in the fall. The necessity and advantages of such forward planning of the meetings of the Division were emphasized by the chairman.

Mr. Byam next stated that the executive committee of the Division has decided to withdraw its sponsorship of the Rubber Division Library, and that this project will be discontinued early in 1954. He said the decision was reached because of the apathy of the members with regard to the use of the Library and the lack of suggestions for adequate financing on a continuing basis. The chairman said he regretted that this action was necessary, but pointed out that the Division was not in a position to underwrite the Library project since the yearly income of the Division was less than the cost of the operation of the Library.

The chairman paid tribute to the work of Mr. Haynes, who was retiring as secretary after seven years, and also to other officers with whom he had worked, including last year's chairman, Waldo Semon, B. F. Goodrich Co.; the new chairman, Mr. Walton; and Mr. Neal, the new secretary, a former director of the Division, and at present a councillor of the Society. Mr. Byam also thanked the committee chairman and members for their help during the course of his service as chairman. He said he viewed the end of his term as chairman with mixed emotions; on the one hand he was reluctantly giving up the job, but on the other hand he was glad to transfer the load of responsibilities involved to the new chairman.

The Division Banquet

The Division banquet held in the Hotel Sherman on the evening of September 10 was attended by 700 members and guests. It was preceded by the cooperative cocktail party of the suppliers to the industry in the Exhibition Hall of the same hotel, and the arrangements for this very pleasant interlude were handled by a committee headed by Mr. Baldwin.

Mr. Byam presided at the banquet and, after welcoming the members, guests, and the ladies present, paid tribute to the work of the local committee on arrangements headed by Herman Boxser, Acadia Synthetic Products Division, Western Felt Works, assisted by S. M. Lillis, Victor Mfg. & Gasket Co., as vice chairman. He then also thanked the committee members, members, the editors of the trade journals, and the employers who permitted the expenditure of time and funds by the members of the Division, without which its activities would be impossible or drastically reduced.

Those present at the head table were then introduced, including such honored members and guests as Farrington Daniels, president, and Harry L. Fisher, president-elect of the Society; Alden H. Emery, executive secretary; and Walter J. Murphy, editor of its applied journals; Dr. Parkinson; the Hon. Dato H. E. MacKenzie, rubber planter and member of the Johore Legislative Council, Malaya; and, of course, the Goodyear Medalist, John T. Blake.

In addition to the ceremonies in connection with the presentation of the Goodyear Medal to Dr. Blake, a special tribute was paid to retiring secretary "Charlie" Haynes. This portion of the program was unannounced and included some remarks by Mr. Emery in which he emphasized that the success of the Society was due not to the paid staff, but to the elected officers such as "Charlie" Haynes. The executive secretary also took this occasion to pay his tribute to the Goodyear Medalist, Dr. Blake.

H. I. Cramer, Sharples Chemicals, Inc., a past chairman of the Division, then spoke for the seven chairmen who had served with the retiring Division secretary. In addition to reviewing "Charlie" Haynes' industrial career, which began in 1904, with the Boston Rubber Shoe Co., and continued with Boston Woven Hose, then included the Mechanical Rubber Goods Co., U. S. Rubber, and finally Binney & Smith Co., since 1935, Dr. Cramer paid tribute to "Charlie's" congeniality, youthfulness, and alert mind, which throughout the years accounted for the high esteem in which he is held by his host of friends in the industry and the Rubber Division.

In view of "Charlie" Haynes' ability as an accomplished pianist and organist, he was presented with a certificate for a Webster wire recorder as a token of appreciation of his service to the Division.

Chairman Byam next reviewed briefly the origin and purpose of the presentation of the Division's Goodyear Medal and then introduced the 1954 Division chairman, Mr. Walton, who spoke on "Accomplishments of the Medalist." Dr. Blake was described as a true Bostonian, and mention was made of his college and university

Chem. Eng. News Photo

"Charlie" Haynes, Retiring Division Secretary, Receives Best Wishes from H. I. Cramer, Who Spoke for the Seven Past Chairmen Who Had Served with Mr. Haynes, and a Certificate for a Webster Tape Recorder

training. Upon obtaining his doctorate from Massachusetts Institute of Technology in 1924, he joined Simplex Wire, where he has remained until the present day. Dr. Blake's many contributions to the rubber literature, including the results of his research on the thermochemistry of vulcanization, the action of light and ozone on rubber, the reinforcement of rubber, the use of rubber as a dielectric, and the development of new synthetic resins, were cited as the basis for the Goodyear Medal Award. Also, Dr. Blake is a co-author of the A. C. S. monograph, "The Chemistry and Technology of Rubber," with C. C. Davis, and holds many patents in the rubber field.

On the personal side, John Twiss Blake was described as modest, friendly, quiet, with major hobbies consisting of sailing and contract bridge, having developed his own system for the latter which is held in high regard by bridge players who are acquainted with it.

Dr. Blake has held many offices in the Rubber Division including that of past chairman and is also active in the Northeastern Section of the A. C. S., the Boston Section of the American Institute of Chemical Engineers, the Boston Rubber Group, and the American Society for Testing Materials.

In making the presentation of the Goodyear Medal, Chairman Byam most appropriately described John Blake as "eminent scientist, rubber technologist, respected citizen, and our good friend."

In his acceptance of the Goodyear Medal, Dr. Blake expressed his appreciation for the high compliment it represented and the opportunity it offered to be with "so many, very good personal friends."

More on Group Outings

Large Crowd for Akron Group

THE annual outing of the Akron Rubber Group was held June 19 at the Firestone Country Club, with approximately 850 members attending. Of this number, some 260 participated in golfing activities; while a group of "customers" teamed up to beat the "suppliers" in a baseball game.

Northern California Barbecue

THE annual "Good Times" Barbecue of the Northern California Rubber Group was held September 19 at the Adobe Creek Lodge, Los Altos, Calif., and was attended by 136 members, wives, and children. Activities for the adults included softball, volley ball, swimming events, and horseshoes; while the children competed in 18 contests.

Fourteen-ounce steaks were served on the barbecue and were complemented by salads, baked beans, and garlic bread plus beer and soda pop. The big day was planned by the outing committee consisting of H. Burke, Burke Rubber Co.; J. Elwood, Monsanto Chemical Co.; W. Deis, Goodyear Rubber Co.; G. Gador, Oliver Tire & Rubber Co.; and R. Hatch, Mansfield Rubber Co.

Record Throng for Philadelphia

THE ninth annual outing of the Philadelphia Rubber Group was held under the direction of A. J. DiMaggio, Firestone Tire & Rubber Co., on August 21 at the Cedarbrook Country Club, Mount Airy, Pa. Many of the attending crowd of 229, largest in the Group's history, participated in the golfing activity, which saw both J. Baymiller, Armstrong Cork Co., and E. Osborne, B. F. Goodrich Chemical Co., register scores of 78 to capture the event. A cocktail hour and dinner and the awarding of door prizes completed the activities. In charge of the various events were L. Shaw, The B. F. Goodrich Co., and T. Elkin, R. T. Vanderbilt Co., prizes; G. Wyrough, Wyrough & Loser, golf; and M. A. Youker, E. I. du Pont de Nemours & Co., Inc., donations.

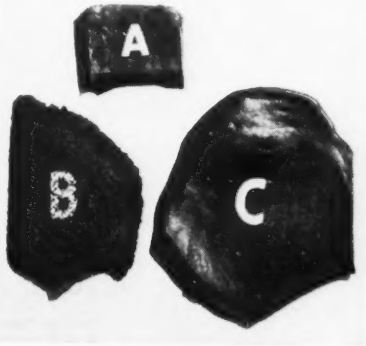
Arthur M. Neal, New Division Secretary

Discuss Air Force Tires

THE Southern Ohio Rubber Group held a dinner-meeting at the Engineers Club, Dayton, O., on September 17, attended by 100 members and 12 guests. Principal speakers of the evening were K. W. Zahrt and Col. M. E. Sorte, both of the Wright Air Development Center.

Mr. Zahrt discussed the United States Air Force's tire development program, including in his talk a sound motion picture showing the effect of high-speed landings on tires, and the results of dynamometer tests on tires at —65 to 575° F. Colonel Sorte spoke on the development of WADC and showed a documentary film, "Now for Tomorrow," covering the step-by-step construction of the facility.

It was announced that the next meeting of the Group will be held for members and wives on December 12 as a combined winter meeting and Christmas party.



Stages in Scorchy Stock Recovery

Akron Polymer Lecture Group

THE program of lectures to be given by the Akron Polymer Lecture Group under the auspices of the University of Akron has been announced for 1953-1954. The meetings well be held in Knight Hall at the University and will commence at 8:00 p.m. according to the following schedule: August 21, 1953—"Abrasion Studies on Rubber," A. Schallamach, British Rubber Producers Research Association; September 4—"Ionic Polymerization: Chain Transfer in Ionic Systems," C. G. Overberger, Polytechnic Institute of Brooklyn; October 1—"Rate Processes Applied to Polymeric Configuration," H. Eyring, University of Utah; November 6—"Condensation Polymers—Structure and Physical Properties," E. L. Wittbecker, E. I. du Pont de Nemours & Co., Inc.; December 4—"Dynamic Properties of Polymers and Polymer Solutions," J. D. Ferry, University of Wisconsin; January 8, 1954—"Mechanism of Sulfur Vulcanization," B. C. Barton, United States Rubber Co.; February 5—"Structure of Polyethylene," W. M. D. Bryant, du Pont; March 5—"Kinetics of Auto-oxidation," R. B. Mesrobian, Brooklyn Polytech; and April 2—"Molecular Configuration in Polyelectrolytes," P. J. Flory, Cornell University.

Correction

IN THE article, "Coefficients of Friction of Rubber Samples," by James A. Hurry and John D. Prock, which appeared in our August issue, the authors have advised that the sentence on page 621, under "The Start of Slip," at the end of the second paragraph, which states, "The slope of the curve is the acceleration of the sample holder," should have been deleted from the manuscript since it is not directly relevant to the figures which are shown in the paper.

Recovering Scorchy Neoprene Stock

A REPORT from Thermoid Chemical Co., Trenton, N. J., claims that supposedly useless batches of neoprene, which have started to set-up in storage, can be recovered without appreciable loss in physical properties by the incorporation of Fortex PHR, a product of the Thermoid company.

In the illustration, the sample designated *A* is scorchy material cut from a factory slab after Banbury mixing and sheeting. *B* shows the same stock following an attempt to smooth it out on a laboratory roll mill. In this case, the roughness and nerve persisted with continued milling. Piece *C* is again the same stock completely smoothed out after the rapid incorporation of 20 parts of Fortex PHR.

The following test data indicate that the incorporated Fortex PHR also restores the scorching time of the neoprene to normal and maintains the cured physical properties of the synthetic rubber.

Tests	*B* Stock	*C* Stock*
Mooney scorch (250° F.), min.	——	28
Vulcanizate properties (cured 30 min. at 287° F.):		
Hardness	65	70
Tensile strength, psi.	1250	1175
Elongation, %	160	190

* *B* plus 20 parts Fortex.

NEWS of the MONTH

The names of the three members of the Rubber Facilities Disposal Commission are expected to be revealed by the White House by October 1 and thus get the work of the disposal of the government's synthetic rubber plants under way.

Rep. Paul W. Shafer (Rep., Mich.), who headed the joint House-Senate conference committee on disposal legislation in the last Congress, which finally resulted in the present Disposal Act, expressed grave doubts that any synthetic plants will be sold under the Act, in a speech before the Plastics Division, Manufacturing Chemists' Association, Inc., on September 14. He blamed Senate Democrats for insisting upon the amendment calling for the anti-trust opinion from the Attorney General, the "item veto" amendment, and the feeling in some quarters that the full original cost of the plants be received. Immediate industry comment on the Shafer speech was not forthcoming, presumably because the speech was considered too pessimistic, and the rubber community preferred to "wait and see."

A report on the nation's stockpiling efforts from the Defense Department, on August 15, revealed that the guayule rubber research program will be placed on a standby basis after June 30, 1954. Other information on rotation of the rubber in our natural rubber stockpile and the Agriculture Department's program for development of an economic rubber plantation industry in the Western Hemisphere was also included in this report.

The Reconstruction Finance Corp. is reexamining its rubber program in view of the scheduled cutback in production of GR-S. No decision has been reached on the proposal to require large consumers of dry GR-S to place orders covering a 90-day instead of the present 30-day advance period.

Firestone, Goodrich, and Goodyear signed new wage and welfare contracts with United Rubber Workers, CIO, during late August and early September. A wage increase of about 2.5¢ an hour and expanded hospital and medical insurance programs were included in these contracts.

Washington Report by Arthur J. Kraft

Naming of Disposal Commissioners by October 1 Expected; Shafer Doubts Disposal under New Law

In mid-September the Rubber Facilities Disposal Commission, the three-member group which is to take bids and negotiate sales contracts for the government's synthetic rubber plants, had not as yet been named. The White House delegated the job of sifting candidates (or finding them) to RFC Administrator Kenton R. Cravens, and Mr. Cravens has put many busy hours into this task. In mid-September, rumor had it that he had come up with three candidates, and their official appointment was expected to come some time before October 1, bringing an end to the anxiety caused by the long delay in getting the disposal job under way.

Shafer Pessimistic on Disposal

The slow start apparently was not the only cause for anxiety over prospects for disposal. Representative Shafer delivered a lengthy speech on this subject on September 14 in which he expressed grave doubts that any synthetic rubber plants will be sold. Shafer, who headed the House Armed Services rubber subcommittee and later the joint House-Senate conference committee on disposal legislation, delivered his indictment of the Disposal Act in a speech before a Plastics Group outing of the Manufacturing Chemists' Association at Osterville, Mass.

"I would be less than candid," he told this group, "if I did not tell you that I have doubts as to whether there will ever be anything sold under this Act."

He blamed the Senate for insisting upon amendments which, while purporting to strengthen the antimonopoly provisions of the House bill, actually, according to Mr. Shafer, "will result in no disposal whatsoever."

This, he charged, is just how the Senate Democrats planned it.

"I sincerely hope I am wrong," Mr. Shafer declared, "but I cannot help but feel that there is, in spite of high sounding phrases, a rather strong sentiment in the Senate favoring the continued government ownership of our synthetic rubber industry. Only time will tell. You will learn the answers when the report is submitted to Congress. I predict that any company which has had the misfortune to be successful, will find itself the subject of much criticism. You, who created the synthetic rubber industry, may find that initiative and enterprise are a handicap. Your penalty for achievement may well be the continuation of government in the chemical rubber business."

Under the Disposal Act, signed by the President on August 7, the Commission is to submit a report to Congress by January 31, 1955, containing the contracts which it has negotiated and its recommendations pertaining thereto. Congress will then have 60 days during which either House may veto any one or all of the proposed sale contracts. But, to pick up from Mr. Shafer's speech:

"Now," he continued, "I have painted a rather dark picture of the prospects of disposal, because I am afraid that no matter what is bid, the groundwork has been laid for turning this program into a political issue. If we are selling plants that could be operated by any average-type corporation, I would not be concerned, for there would be enough bids submitted to make a wide dispersal of sales possible. But unfortunately, as we all know, the majority of the companies who bid for these facilities will be made up of what is commonly referred to as 'big business.' It is that type of industry. And this in itself will bring about charges, unsupported as they may be, of 'give-away,' 'monopoly,' 'favored few,' 'the Big Four,' the 'oil lobby,' and all of the other catch phrases with which you are so familiar. It is conceivable that under the circumstances our synthetic rubber industry may become one of the biggest white elephants in the history of goverment."

New developments, he said, may make the present plants obsolete. If the demand for new rubber increases to the extent where private industry could compete with government, "We may possibly find private industry constructing synthetic rubber facilities considerably more efficient than those now in existence. If this does happen, the government facilities may become rapidly obsolete. That, coupled with the charges that will be made against any members of big business who bid on these plants, may cause a considerable lack of enthusiasm in purchasing these facilities to spread among possible bidders."

Shafer singled out several provisions of the Disposal Act for direct criticism, provisions written into the bill at the insistence chiefly of Senate Democrats. One of these was the requirement that the Attorney General advise the Commission whether the proposed sale would violate the anti-trust laws.

This, Mr. Shafer said, "incorporated an entirely new philosophy in the disposal program." Under the Act the Attorney General "must not only find in a written opinion that the disposals will not violate the anti-trust laws, but, in addition, must set forth findings approving the type of disposal program which will best foster the development of a free competitive synthetic rubber industry. These will be in the nature of judicial findings, and I will now prophesy that they will embarrass the Attorney General, when and if he makes these findings, for many years to come. From the purchasers' viewpoint, I know of no provision of law which would be more welcome, because the Attorney General, in approving the sale, must make findings which I am confident will be used against him in any future anti-trust actions. As a matter of fact, there may even be some doubt as to whether the Attorney General will make these findings; and if the Attorney General should refuse to make them, then, of course, there could be no disposal program."

The speaker also had sharp words for the "item veto" amendment which permits Congress to disapprove one or more proposed sales without affecting the others. The way the Senate sponsors had it, he said, Congress could have disapproved the sale of a butadiene facility while requiring the bidder for a dependent copolymer plant to go through with his purchase, even if

there were no feedstock of butadiene available to him. The House and Senate bills also provided that the Commission report had to recommend sales which would result in a capacity to produce at least 500,000 tons of GR-S and 43,000 tons of butyl.

The item veto provision was modified at Mr. Shafer's insistence with a provision permitting all purchasers to withdraw their offers if Congress disapproves of any of the sales recommended by the Commission.

"This," Mr. Shafer said, "was the only fair thing to do under the circumstances and the only thing that made any sense. So today, we have a law which is called a Disposal Act, which may or may not be a disposal act. In fact, there is doubt in my mind whether these facilities will ever be sold under this law. I think that no matter what is bid for the facilities or no matter to whom the facilities are sold, the cry of 'give away' and 'monopoly' will be heard on the floors of the Congress. But at least the purchaser now has one advantage—if one facility is disapproved, he can withdraw from the proposed program.

"What brought about this change in the political thinking in one body (the Senate) as contrasted with the almost unanimous thinking in the other body? I do not know, except to paraphrase one very prominent Senator [otherwise unidentified by the speaker] who sat in the conference representing the minority (Democrats) and said, 'I am sure there are members of the Senate who would prefer to see the government stay in this business.'"

Mr. Shafer who was the prime mover behind disposal legislation, then declared, "I do not have pride of authorship in this disposal act, for my philosophy is not contained in that Act."

Earlier in his speech Shafer warned that the disposal program will be assailed as a "giveaway" if the government fails to get a return on its plants equal to the $700-million original investment in them. Creation of the synthetic rubber industry in the urgent days of World War II, he said, was a "notable achievement and contributed much to the winning of the war. But I am afraid that there are some persons in and out of Congress who forget or prefer not to remember that it was American industry that made this miracle of rubber production possible. The government, as such, didn't contribute anything except money. I do not underestimate the importance of money, but all the money in the world won't produce rubber without the technical know-how that puts the money to work. Industry contributed the brains; industry furnished the manpower; and industry supplied the patents. Now, you are going to hear a lot about the original $700 million because, notwithstanding the fact, there will be some who will shout long and loud that any return from the sale of these plants that doesn't represent the total investment is a pure giveaway."

The original $700 million and the $500 million now referred to as the original cost of the facilities still in government ownership (some had been sold as surplus property after V-J Day) "represents a type of expenditure that is comparable to the wartime costs of battleships and cruisers, built without regard for the dollars involved. I do not know," the Congressman continued, "how much these facilities are worth, but they do deteriorate, and technological obsolescence must certainly be a factor to be considered in arriving at their value."

Shafer recounted the views expressed by industry witnesses in earlier hearings on disposal legislation proposals in 1948 and again in 1950, testimony which, he said, was "conflicting," and Shafer went along with the majority. Congress both times decided to defer sale of the plants and maintain government operation as the best assurance of the national security.

"But," he said, "I want to make it clear that in my opinion, this nation today would have more and better synthetic rubber had all of the facilities been sold to private industry in 1946, 1947, or 1948. It was not the fault of government that those facilities were not sold. It was the careful restraint of industry and industry's own unwillingness to accept the risk, that led to the continuation of the government in the synthetic rubber business."

Industry Comment on Shafer Speech Absent

One would have thought that Shafer's remarks would have stirred up some comment in the rubber community. However those who might have been expected to react, pretty much have kept their own counsel. This attitude does not indicate apathy toward disposal. As far as it can be judged, the response to the very provocative Shafer speech was that Mr. Shafer is too pessimistic. The rubber community would prefer to wait to see whether the admitted problems facing the disposal effort can and will be surmounted. There is no question that Shafer is sincere in his view that the Senate Democrats are basically opposed to selling the rubber plants and deliberately set out to hamper disposal by insisting on stacking the cards against a workable disposal program. Whether he is correct in this judgment is something else again. He expressed the same views several times while the bill was being thrashed out in Congress and publicly avowed his keen disappointment in the final product, even while requesting the House to go along with it.

The unwillingness of the rubber community to join with Shafer's prejudgment of probable failure of the disposal effort does not imply any lack of recognition of the real difficulties in store. One of these, of course, is the question of time—or lack of time due to the slow start in getting the Commission named and on the job. Under the Disposal Act the Commission must allow at least 13 months to taking proposals and negotiating sales, which means it must start accepting proposals by January 1, 1954, if it is to meet the deadline set out in the Disposal Act for submitting its recommendations to Congress. Prior to accepting proposals, the Commission must solicit the proposals, and, this work, too, will require some time. And, it would seem logical that the Commission would want to give itself at least a little time to get acquainted with the job at hand, pick a staff, etc., before putting out advertisements calling for proposals. Some spadework has been under way for the past two months in RFC, which is getting together data on the various facilities and putting these data into brochures which can be distributed to prospective purchasers. This job may be completed in time to make a contribution toward speeding the preliminary work of the Commission. There seems to be a general assumption here that it will be necessary, some time during the next year, to request Congress to extend the deadline for the Commission's report at least several months past the present January 31, 1955, deadline. The White House over the past two months has had several reminders that appointment of the Commission was overdue. The delay probably can be explained, although we do not know, by an absence of a feeling of urgency in the White House and some difficulties in finding three men willing and able to take the job of serving as a Disposal Commission. There seems little question that extreme caution in selecting Commissioners has been necessary in view of obvious suspicions of the Senate Democrats that the disposal program may be a Republican giveaway program. To deflect this type of criticism, the appointments to the Commission must be irreproachable. On the record thus far, the present Administration has not scored very well in this area. It has been subjected, in fact, to severe criticism of many of its choices for important policy making positions.

Decisions Required of Commission

When it buckles down to its job, the Rubber Facilities Disposal Commission will have some important decisions to make. Some of these may be outlined as follows:

1. It will have to interpret the law under which it must operate, including those provisions requiring consultation with the Attorney General. It must work out some modus vivendi in its relations with the Attorney General, which, evidently, will be constant and close relations. The Justice Department already has designated one of its economists, I. Lewis Marcus, to work with the Commission. The disposal law required that the Attorney General have time to review the Commission's recommendations prior to their submittal to Congress. The law requires that this period not exceed 90 days. The Commission and the Attorney General will have to determine for themselves whether this review period, designed to give the Attorney General time to make his judgment of whether the disposal plan violates the anti-trust laws, is to run concurrently with the period of negotiations between the Commission and prospective purchasers.

2. The Commission will have to decide which criterion to follow, or what weight is to be given to each, in deciding which bids to accept, those bids which assure the highest financial return for the plants, or those that give the best prospect of a competitive pattern in a private synthetic rubber industry. It is quite possible, after all, that the higher bidders may be the larger companies in many, if not all, cases where two or more bids are offered on a single facility.

3. The Commission may face a problem in getting enough offers to assure that the minimum capacity tonnage can be sold, the 500,000 tons for GR-S and 43,000 tons for butyl. It seems unlikely that the Big Four will be encouraged to buy more than one plant each, because of criticism which might be expected in Congress to concentrating ownership of the major portion of synthetic rubber capacity in the larger firms. If the Commission feels constrained not to recommend sale of more than one copolymer plant to each purchaser, it would seem likely that bidders will confine their offers to the more desirable plants and ignore the less desirable. As for meeting the butyl tonnage criterion, only one plant need be sold of the two now owned by the government. Nevertheless the present operators of each of the two have said they want to buy the plant each now operates, and this preference could pose an anti-trust question since both of these companies have a common parent company in Standard Oil Co. (N. J.). Esso Standard Oil Co., which operates the Baton Rouge, La., butyl plant is an outright subsidiary of Standard Oil Co. (N. J.)—popularly known as Jersey Standard—while the operator of the Baytown, Tex., butyl plant, Humble Oil & Refining Co., while less strongly controlled, if controlled at all, by Jersey Standard, is owned by Jersey. The parent company owns

most of the common stock in Humble, and another subsidiary—Esso Development—owns the butyl patents.

4. The Commission must decide whether to disclose to prospective purchasers the findings of the Parsons report—the engineering survey made a year ago for RFC which purportedly sets a replacement value figure on each of the 28 facilities owned by the government. The contents of this report have been kept secret by RFC.

In addition to these decisions, the Commission may have to decide fairly early in the game what line to take in seeing to it that prospective buyers of butadiene plants have a market for their butadiene and that prospective buyers of copolymer plants have a secure supply of butadiene. For the program to succeed in eliciting a sufficient number of sound bids, some effort will be required by the Commission to "line up" the butadiene plants with copolymer plants, perhaps with the Commission serving as a go-between in getting a meeting of minds between likely buyers of these two types of mutually dependent facilities.

The Disposal Act requires prospective bidders to inform the Commission in writing as to how they plan to distribute the end-products of the plants they intend to buy—a provision written into the law to help provide some assurance that small users of GR-S will continue to be supplied even if they do not control their own source of production. The Commission will have to decide whether and how to assure that these expressions of intent to supply small business are carried out, whether and how they may be enforced. This problem could be a lively one for the Attorney General, as well as the Commission, since it would appear likely that the Attorney General, as top anti-trust officer of the government, may have to struggle with problems of fair distribution of synthetic rubber for some time to come after the Disposal Commission is gone from the scene.

And, some time between now and 1955, the Commission may have to decide how much importance to assign to the continuing obsolescence of the rubber plants, and how much weight to give this factor in determining whether the prices offered for these plants are acceptable. This, of course, may well tie in with the decision made about the second problem listed above, whether the Commission should emphasize financial return or development of a competitive pattern of ownership. That problem may be the most difficult of all, since Congress seems prepared, according to Mr. Shafer, to turn down the disposal program if it doesn't bring in a high financial return on the government's investment and to deal out the same fate to the disposal program if it doesn't assure a wide dispersal of ownership of the rubber plants. It will be difficult, perhaps too difficult, to realize both of these objectives in the same disposal package.

Defense Department Report on Stockpiling Reviews Rubber Development Projects

The guayule rubber research program in this country will be placed on a standby basis after June 30, 1954. The program conducted by the Department of Agriculture is designed to provide the basis for an emergency production of domestic rubber. Conducted in California and Texas, the guayule crop production research has been aimed at developing higher yielding, disease-resistant strains.

The Defense Department, in its semi-annual report on the government's stockpiling program to Congress on August 15, said that "plans are being perfected for establishing plantings of the guayule breeding stocks and the better existing strains to minimize the losses of irreplaceable material due to placing the guayule research work . . . on a standby basis after June 30, 1954."

Highlights of that report in reference to rubber follow:

About $2 billion of the $6.5 billion of stockpile purchase transactions (actual purchase and commitments for future deliveries) are represented by expenditures on copper, rubber, and nickel. How much was spent on rubber alone was not disclosed, although it is believed that the government may announce this figure in the next few months.

Relatively little damage from fire has occurred to stockpiled materials, and fire protection standards have been improved as a result of the few fires, all in commercial warehouses, which did take place. Among these was the Clarksburg fire of July 10, 1952, which destroyed a "considerable amount of stockpile rubber." A photograph of this fire is reproduced in the report.

Some rubber now in the stockpile has been in storage since 1940 and is still in "excellent condition." Impurities in rubber, found more generally in lower grades, apparently contribute to shorter storage life as do warmer temperatures in the warehouse. Industry technicians have stated that if rubber could be kept frozen, it would keep practically forever. Refrigerating the enormous amount of space required for the rubber stockpile is, of course, out of the question. However stockpile rubber is stored in areas, above the 55° average annual temperature line, which have a considerable number of below-freezing days. Under proper warehouse control the hardened mass of rubber does not soften sufficiently or long enough to cause undue deterioration.

"No organized test program has been established to determine the maximum storage life of natural rubber. However, it is now the opinion of stockpile rubber inspectors that the higher grades may keep well for at least 15 years. After the lower-grade rubber taken into the stockpile during the past two years has been rotated for higher quality the problem will be greatly alleviated and surveillance reduced to making nominal exchanges each year."

How far into the future is the date when all lower-grade stocks will have been replaced and the period of "nominal exchanges" will begin the stockpile report does not say. However, judging from the comments of the spokesmen for Asian natural rubber producers, it cannot come too soon.

As one such observer put it recently, "The chief consumer, the U. S., possesses an enormous stockpile, which, though primarily acquired for strategic purposes, can be and is being made available to U. S. manufacturers in accordance with a stock rotation scheme, thanks to which they can periodically hold off the market and so keep rubber prices down."

The stockpile report reviewed in some detail the progress to date of another Department of Agriculture rubber program, that providing research and technical guidance for the development of an economic plantation rubber industry in the Western Hemisphere. The soon-to-be-suspended guayule program in the U. S. is only a small part of this. The larger part is the development of rubber growing in Latin America. Here's what the stockpile report has to say on this subject:

"Rubber shortages, the desire for national self-sufficiency, and the success of small plantings just being brought into bearing have increased the interest in planting rubber in Latin America. Available planting material in nurseries and number of trees already planted indicate that Brazil should succeed in planting 5,000 or more acres in 1953, as a beginning of a vastly expanded program of plantation rubber development designed to make the country independent of outside sources of supply. Plantings have been materially enlarged in Peru. Government plantations and private farm plantings by small-farm operators will be expanded by several hundred acres in 1953. Bolivia has planting material and requests from planters for approximately 500 acres of new plantings for the year. Guatemala has stepped up small-farm planting of rubber from 140 acres in 1952 to approximately 700 acres for 1953. Requests for planting material have been received from 392 farmers, and the Guatemalan government has increased nursery and technical facilities to fill these requests. Success with clonal seed planted at stake in 1952 indicates that additional acreages should be established by this method in 1953."

Returning to the guayule program in the U. S., the report makes these further observations: "Several two- and three-year-old guayule plants have been selected in Texas for increase. These plants have shown ability to accumulate rubber in Texas at a rate equal to that hitherto expected only in the cool coastal areas of California."

The natural rubber extraction and processing project operated by the Bureau of Agricultural & Industrial Chemistry (U. S. Department of Agriculture) at Salinas, Calif., was terminated on April 30, 1953. During the final nine months of activity on this project investigations on the improvement of guayule rubber for use in such commercial items as airplane tires and heavy-duty truck tires were carried through certain pilot-plant stages, and semi-commercial quantities of the purified rubber were prepared and delivered to tire manufacturers, one of whom is working with the Air Force in manufacturing airplane tires of guayule. Other activities of the Salinas project were brought to such a point as to preserve essential data for any future emergency needs. Comprehensive reports were prepared covering the work of the Salinas Station since its reactivation in 1947 and on the processes and equipment now believed to be best suited to the recovery and purification of guayule rubber as well as the nature and extent of problems remaining unsolved when the project ended in April.

Buffer Stock Plan To Be Discussed Again in London, October 12

The Management Committee of the International Rubber Study Group is scheduled to meet in London on October 12 to take another look at the rubber supply-demand picture and review the question of whether a "buffer stock" scheme to stabilize the natural rubber market should be attempted.

The meeting has been set up pursuant to

a resolution of the Study Group at its last annual meeting in Copenhagen in May. At that time the Group estimated a statistical surplus of natural rubber of some 193,000 long tons at the end of 1953. It failed to agree on the desirability or need of a buffer stock program designed to prevent burdensome surpluses or severe shortages and instructed members of the Management Committee to take another look at the plan this autumn.

This will be done, but the prospects are dimmer than ever that the buffer stock proposal, originating with some, but not all, of the producing countries will make any headway. The chief reason is that the year-end surplus in prospect today will be much smaller than forecast last May. The outlook now is that the surplus will be in the neighborhood of 100,000 tons, and perhaps less. When this prospect is compared to the surpluses of 385,000 and 335,000 tons of 1951 and 1952, respectively, it can be seen that rubber producers this year will have less cause for anxiety than in the recent past. Sought as a price relief measure at a time of sharply falling prices, the buffer stock scheme has now pretty well given way in the hopes of the rubber producing areas to a demand that the U. S. Government raise the price of synthetic rubber. A price boost for GR-S, it is felt, will permit a higher price to be charged for natural rubber, which is the full measure of relief that the rubber growers are after.

At the Copenhagen meeting the Management Committee was instructed to determine whether agreement among member nations on the need of a buffer stock scheme "appeared possible." Members of the Committee are the U. S., British Colonial and Dependent Territories, Cambodia, Canada, Ceylon, Denmark, France, Indonesia, the Netherlands, and the United Kingdom. Any other member countries wishing to do so were invited to participate in the October meeting. Willis Armstrong, of the Department of State, is expected to attend the London meeting for the U. S.

Commerce Business Service Plan Limited

Norman E. Hathaway, sales manager of the industrial chemicals department, Davison Chemical Corp., Baltimore, Md., was appointed director of the Chemical & Rubber Division, National Production Authority, on August 31. Mr. Hathaway, on loan by his company to the government under the Commerce Department's executive rotation system, succeeded L. A. Helfrich, who returned to his post with U. S. Industrial Chemicals Co.

At the same time Dr. Lowell B. Kilgore, a veteran government servant, was named deputy director of the Chemical & Rubber Division, succeeding L. A. Schlueter, who resigned to accept a position with the Coal & Coke Institute in Washington.

Mr. Hathaway is a member of the American Chemical Society, American Institute of Chemical Engineers, and the Commercial Chemical Development Association. He was director of technical service for Davison Chemical from 1946 to 1951, when he became sales manager.

Commerce Secretary Sinclair Weeks' plan for replacing NPA with a new business services agency, described in some detail in our July issue,[1] ran into a roadblock over at the Justice Department, which raised objections, on anti-trust grounds, to an integral part of the Weeks' plan—the industry advisory councils. At this writing it was reported that Mr. Weeks intended to go ahead with the plan, minus the advisory councils, and establish the Business & Defense Services Administration within his department as successor to NPA. If Mr. Weeks and the Justice Department can iron out their differences on the character and role of the advisory councils, these may come along later. The Justice Department does not look with favor upon Mr. Weeks' proposal that the advisory councils, one for each basic industry and composed of industry leaders, have their own chairman and set their own agenda. Justice Department policy is that business advisory groups have government officials as chairmen and government-set agenda.

In another development the Commerce Department announced last month that it has dropped the Censuses of Business and Manufactures because Congress refused sufficient funds for that purpose. The Rubber Manufacturers Association, Inc., and many other business groups had sought unsuccessfully to convince Congress to authorize requested funds for these projected censuses.

RFC Synthetic Rubber Production and Sales

A strike by office workers closed down the Port Neches, Tex., copolymer plant, operated by United States Rubber Co., in early September, with only about 1,200 tons of that plant's scheduled monthly output of 5,500 tons produced. The loss of about 4,300 tons of GR-S at Port Neches, plus cancellations of orders for some 500 tons of latex elsewhere, is expected to find September's total output of GR-S trimmed to about 42,000 long tons. Prior to the strike, September output had been scheduled for 47,000 tons (excluding oil content). The loss of production due to the strike did not "hurt" since RFC's big problem is to keep production down so as not to swell its own inventories. Production has been scheduled at an average 41,000 tons a month for the October, November, December period.

August sales of GR-S amounted to 42,369 tons, as against a scheduled production in that month of 50,150 tons. Sales included 25,647 tons of LTP (cold rubber) GR-S, 6,552 tons of black masterbatch (gross weight), 8,051 tons of oil masterbatch (gross), 1,533 tons of oil-black masterbatch (gross), and 3,412 tons of latex. Butyl sales totaled 5,264 tons.

The scheduled cutback in production of GR-S has led RFC to rebudget its rubber program for the current fiscal year (July 1, 1953, to June 30, 1954) so the agency, in the words of Administrator Cravens, "will see where we stand." Mr. Cravens said the rebudgeting, which is being done on a quarter-by-quarter basis, will be conducted with "meticulous care." If production costs are found to be higher than previously anticipated, there is a possibility that RFC may, in order to realize the high profits anticipated earlier in the year, increase the price at which it sells GR-S. This, it should be emphasized, is no more than a possibility, and it will probably be several months before RFC makes a new move, if it does make one at all, on price.

As September neared its end, Mr. Cravens had not yet made up his mind on whether to institute the new sales policy which he proposed to the RFC rubber industry advisory committee in August. Briefly, the proposal was to require larger consumers of dry GR-S to place orders covering a 90-day period, doing away with the present 30-day advance order procedure except for smaller consumers, who wish to continue on the 30-day basis. Smaller consumers may elect also to go on the 90-day advance order basis, under the proposal. Purchasers placing orders for 90-day requirements would receive price protection, in that if RFC advanced the price of GR-S in that period, purchasers ordering on the 90-day basis would continue to pay the old, lower price on all outstanding orders. Purpose of the RFC proposal is to give the agency better control over its production, a better look at the demand for GR-S for a few months ahead. For this reason purchasers would be required to pay a 1¢ a pound penalty for any supplementary orders for GR-S placed after their original orders, whether for the 90-day or 30-day period.

The 90-day order procedure would be kept on a continuous basis. For instance, were it to take effect for November deliveries, purchasers would be required by October 10 to place orders covering their requirements for November, December, and January deliveries. By November 10 the same purchasers would submit their orders for February deliveries, and so on. The only inducement for smaller consumers to elect the 90-day order procedure is the price-protection provision.

[1] See p. 510.

Other National News

Estimates 1953 U. S. Rubber Use Will Set New Record

John L. Collyer, president of The B. F. Goodrich Co., stated early in September that current Goodrich estimates indicate that the United States will consume more new rubber this year than ever before, or will total 1,375,000 long tons, an increase of 9% over the 1952 record of 1,261,000 long tons. American synthetic rubber, which constituted 64% of the 1952 total, is currently at about 56%.

It was also estimated that sales of passenger-car, truck, bus, farm, airplane, and industrial tires may be as high as 102,000,000 units this year, a volume surpassed only by 1950's record of 106,000,000 units. Collyer added that while tire sales during the last half of 1953 will reflect seasonal declines normally experienced, they will probably be the second highest in the industry history.

It was stated further that the industry's stocks of tires declined more than 1,200,000 units in July, and indications are that another substantial decrease occurred in August. Industry inventories are usually built to an annual peak at the end of each June in order to meet the heavy demands for tires during the heavy summer selling season.

Firestone, Goodrich and Goodyear Sign New Contracts with URWA

New wage and welfare contracts were signed between the United Rubber Workers of America, CIO, and the Firestone Tire & Rubber Co., the Goodrich company, and Goodyear Tire & Rubber Co. during late August and early September. A strike of the workers at the Firestone plants between August 27 and 30 occurred, however, before the first settlement with that company was reached. The Goodrich settlement was reached on September 1, and the one with Goodyear just before the Labor Day week-end began. Talks which began only on August 18 between URWA and U. S. Rubber were continuing in late September. Only the wage clause is up for negotiation with this company since it granted a company-paid hospital and surgical plan early in 1953.

The new contracts, which were quite similar, provided for a wage increase of about 2.5¢ an hour and company-paid insurance programs which included hospitalization, surgical and in-hospital medical benefits (doctor's fees) covering both employes and their dependents. An increase in minimum pensions from the $100 a month for those who retire at age 65, depending on the years of service with the company, will increase these pensions to about $125 a month in some cases. A paid two-week vacation after three instead of five years of service was included in the Firestone settlement. The hospital and surgery insurance will give employes and their dependents up to 120 days of hospitalization in a semi-private room and will provide full payment of most hospital services including cardiograph, X-ray, oxygen, and anaesthesia. The new benefits become effective October 1.

The wage increase in the plants outside of the Akron area may be somewhat more than 2.5¢ where inter-area differentials are to be adjusted.

Union leaders pointed out that the insurance benefits are actually hard to evaluate in dollars and cents, but that the employe is obtaining an extra advantage since he gets the benefits without paying the federal income tax which would be necessary if the benefits were paid for out of his own earnings.

Some unexpected difficulty developed at the Goodyear plant in Akron where the local union at a meeting attended by only 250 members rejected the new contract. Objections to the new contract came mostly from employes and beneficiaries of the Goodyear Relief Association, which since 1909 has helped care for Goodyear Akron plant employes' hospital and medical bills and has paid weekly sickness and accident benefits. The future of the Association under the new Goodyear welfare program is therefore uncertain.

Since the other Goodyear locals throughout the country do not have a local welfare association, it is expected that they will ratify the new agreement. It was announced from the national convention of the URWA in Grand Rapids, Mich., during the week of September 16, that the members of the Akron Goodyear local union would have another opportunity to vote on the new contract at a special meeting scheduled for September 21. At this meeting 950 out of 1,000 members of the local union reversed the previous decision and voted in favor of the new contract. The future of the Goodyear Relief Association remains unsettled, however.

As a result of the settlements reached with Firestone, Goodrich, and Goodyear, contract negotiations with many other medium and smaller rubber companies where the URWA is the sole bargaining agent were in progress during the month of September.

URWA National Convention Held

Although only limited information is available from the national convention of URWA, held in Grand Rapids the week of September 14, it has been indicated that the union enjoys a membership that is at an all-time high and that its net worth is nearly $1,500,000.

L. S. Buckmaster, president of the international URWA, warned delegates in his keynote speech against Communism as "the greatest threat to the welfare of man." He was critical of the policies of the Eisenhower administration, but said that the United States must keep its defenses up regardless of who pays the taxes. He indicated that the chances look good for unity between the CIO and the American Federation of Labor.

Buckmaster hinted that he favored changing the union's constitution to space elections of local union officers at 1½- or 2-year intervals and strongly recommended scheduling elections in local unions at "some other time than in May when company-wide negotiations always seem to be under way."

Monsanto Sales Staff Changes

Several changes in the organic chemicals division sales organization, Monsanto Chemical Co. St. Louis, Mo., were announced September 17 by John L. Hammer, Jr., general manager of sales.

Chester W. Christensen, of Akron, O., and Arthur P. Kroeger and Cyrus W. Merrell, both of St. Louis, were made associate general managers of sales—newly created posts. Tullius C. Tupper, of St. Louis, and William M. Russell, of New York, have been promoted to assistant general managers of sales. Russell will be transferred to St. Louis.

Other changes were the promotions of James A. Singmaster, Jr., to New York general branch manager, succeeding Russell; while Jack C. Hutchison takes over Singmaster's duties as New York assistant general branch manager. James J. Feeks, of New York, replaces Hutchison as branch manager at Cincinnati.

The plasticizers and resins sales department in St. Louis, formerly under the managership of Tupper, is being separated into two departments—plasticizers sales, with Howard I. Armstrong, of Boston, as manager; resin materials sales, with A. David Evans, of St. Louis, as manager.

Christensen joined the Rubber Service Laboratories in Akron in 1922 as a salesman. The Laboratories were acquired by Monsanto in 1929, since which time Christensen has been serving in sales management capacities at Akron.

Kroeger started with the company in 1929 in the rubber service department at Akron. He then represented Monsanto in San Francisco and Los Angeles before his appointment in 1945 as assistant general manager of sales.

Merrell came to Monsanto, St. Louis, in 1935 as manager of pharmaceuticals sales and in 1949 became assistant general manager of sales.

Tupper began in the heavy chemicals sales group of Monsanto, St. Louis, in 1933. In 1946, after five years of military service, Tupper rejoined the company, with his headquarters at Cleveland. In February, 1952, he was appointed manager of the plasticizers and resins sales department in St. Louis.

Russell joined the flavors and condiments sales group in St. Louis in 1937; next he represented Monsanto in Detroit; he was named branch manager in 1945. His appointment as general branch manager at Chicago took place in 1949, and he was made general branch manager at New York in 1951.

Singmaster, prior to joining Monsanto, New York, in 1944, had been general manager at Bainbridge, N. Y., for Casein Co. of America, a division of Borden Co. He has been assistant general branch manager in New York since 1951.

Hutchison, with Monsanto since 1941, became a member of the engineering sales department in 1942 and was transferred to Cincinnati in 1949, to become branch manager in 1951.

Feeks, who started with Monsanto at New York in 1934, after four years of military service rejoined the company in 1946 and represented it in the metropolitan New York area.

Armstrong joined Monsanto's W. G. Krummrich plant as an analytical chemist in 1942 and then went into research, St. Louis. He was transferred to organic sales in 1945 and after a training period represented the pharmaceuticals sales group in St. Louis. He has been representing Monsanto in Boston since 1948.

Evans, with Monsanto since 1941, held various research and plant positions in the John F. Queeny plant, St. Louis, until 1944. After 2½ years' military service, he rejoined the company as organic chemicals division salesman in the Detroit office and transferred to plasticizers and resins sales, St. Louis, in 1949.

E. F. Anderson, of Oshkosh, Wis., has been transferred from Monsanto's Chicago office to become resident sales representative of the plastics division for the Minneapolis-St. Paul area and will handle the sale of all Monsanto plastics except industrial resins and Saflex vinyl butyral interlayer for safety glass. Since 1950, Anderson has been employed by the research and sales departments of the plastics division.

Name Change for Neville

The Neville Co., Pittsburgh 25, Pa., in order to relate its corporate title to the scope of products manufactured, has changed its name to Neville Chemical Co. The firm produces rubber processing chemicals, including oils and extender-plasticizer resins.

Binney & Smith Moving

Allan F. Kitchel, president, has announced that some time during the latter part of October, Binney & Smith Co. will move to new headquarters at 380 Madison Ave., at 46th St., New York, N. Y. The timing of the move is contingent on completion of the modern office building which will house all of Binney & Smith's New York activities. According to Mr. Kitchel, every modern facility for efficient operation, including built-in air conditioning, will contribute to the comfort and efficiency of personnel. Telephone number and post office zone number will remain the same.

Erecting Foam Rubber Plant; U. S. Rubber Makes Several New Appointments

United States Rubber Co., Rockefeller Center, New York 20, N. Y., broke ground September 18 for its new foam rubber plant in Santa Ana, Calif., which it hopes will be in production by February, 1954. Santa Ana Mayor Courtney Chandler and A. H. Finnern, Pacific Coast sales manager, footwear and general products division, who represented the rubber company, were the principals at the ceremony.

The new plant, which will manufacture Koylon foam rubber cushions for the automotive and furniture industry, marks an important step in U. S. Rubber's overall expansion plans for West Coast manufacturing facilities.

The plant will be the rubber company's third manufacturing unit for foam rubber products and its sixth major expansion for the manufacture of Koylon foam since World War II. Other installations are in Mishawaka, Ind., and Woonsocket, R. I.

On a 55-acre tract of land, the first unit of the new plant will contain 66,000 square feet of floor space and provide the most modern foam rubber manufacturing facilities available. Warehousing and shipping space, latex storage facilities, laboratories, a dispensary, lunch room, and executive offices are included in the plans. When completed, the unit will employ about 150 persons. As production expands, this figure will increase.

The plant will be of one-story construction in modern industrial architecture. Surrounding grounds will be landscaped. The main entrance will be through the office building, which is connected to the manufacturing plant. Truck traffic is completely separated from both employe and visitor parking areas. The railroad siding will connect at the rear of the plant.

Other rubber company executives who attended the brief ground breaking included R. H. Slate, A. K. Gilroy, and J. A. Crowley.

Changes in Personnel Assignments

Alton D. Fordham has been appointed assistant production manager of the company's footwear and general products division and will be responsible for manufacturing activities in the division's plants at Mishawaka, Ind., Washington, Ind., Stoughton, Wis., Milan, Tenn., and Chicago, Ill. He will make his headquarters at Mishawaka. Mr. Fordham, general superintendent of a variety of products in that plant since December 1, 1950, started with U. S. in January, 1937, in charge of office planning. In October, 1941, he was appointed office manager of the large manufacturing plant and was later given added responsibility of customer service and management engineering.

Louis J. Healey has been appointed assistant manager of branch sales for the footwear and general products division, with his headquarters in Rockefeller Center. Mr. Healey now will share managerial responsibility for sales through district branches of Keds, Kedettes, waterproof footwear, waterproof clothing, Koylon foam mattresses and pillows, sponge rubber underlays, golf balls, waterwear, and other products. He will also be responsible for advertising, sales promotion, and publicity. Mr. Healey started with U. S. Rubber in 1939 as a sales clerk in the San Francisco branch and became a salesman the following year. After serving with the United States Navy from August, 1941, to February, 1946, he returned to the rubber company as assistant district manager of San Francisco branch. The next year he was made district sales manager of the branch, and the following year Pacific Coast sales manager. In December, 1952, he was named sales manager of general products and transferred his headquarters to Providence, R. I.

Arthur John Hocking, having been appointed advertising and sales promotion manager for the branch sales organization of U. S. Rubber footwear and general products division, will be responsible for advertising and sales promotion of Keds, Kedettes, waterproof footwear, waterproof clothing, Koylon mattresses and pillows, sponge rubber rug underlay and non-slip. He has been sales promotion manager since April, 1947. This promotion now gives him responsibility for advertising. Mr. Hocking has been with the company since 1943. Early assignments included products development and packaging.

William C. Imholz has been named to head the West Coast plastics technical service group of Naugatuck Chemical, which he had joined in its production department in 1944. The following year he was assigned to plastics research. Prior to his new assignment he was senior group leader in plastics evaluation and development. Mr. Imholz will make his headquarters at Naugatuck's Los Angeles, Calif., office, 5901 Anaheim-Telegraph Rd.

Five major organizational changes in the sales department of the U. S. tires division also were announced last month. Two new division managers have been appointed; another has been shifted from the southern to the central division, and two new district managers have been named.

H. Newman Roberts, district manager at Charlotte, N. C., has been promoted to southern division manager, with headquarters in Atlanta, where he will supervise the Atlanta, Charlotte, Dallas, Memphis, New Orleans, and San Antonio districts. He joined the rubber company in 1938 and rose to assistant district manager in Atlanta before his assignment at Charlotte.

Walter F. Brown is the new manager of the revised north central division, with headquarters at Detroit. He will also be in charge of the Detroit, Buffalo, Cleveland, Grand Rapids, Indianapolis, and Pittsburgh districts. He was promoted from manager of market development at the New York general offices. Mr. Brown started with the company in 1945 and has been district manager at Springfield, Mass., and at Los Angeles.

Harry R. Mack moves from southern division manager to central division manager, with offices in Chicago, where he will also supervise the Chciago, Fargo, N. D., Milwaukee, Minneapolis, and St. Louis districts. Since joining the company in 1937, he has held a number of posts, including manager of truck tire sales, merchandising manager in the general offices, New York district manager, and eastern division manager.

The new district managers are: Edwin W. Means, Charlotte, N. C.; and Robert R. Walker, Philadelphia. Mr. Means began with U. S. Rubber in 1949 and later became assistant district manager at Charlotte. Mr. Walker has been with the company nearly 14 years and was formerly district manager at Cincinnati and at Pittsburgh. He succeeds E. J. Bassine, who resigned to enter business as a U. S. Royal distributor in Philadelphia.

The textile division has appointed Bernard H. Bloomgarden consumer fabrics sales representative for the West Coast. Mr. Bloomgarden has been in California as an independent mill agent representing various converters. Among the fabrics which he will handle for U. S. Rubber is the new Royal-O, 60% orlon and 40% rayon blend, for use in women's and children's dresses and suits, men's sport shirts, and sportswear for the entire family. Other fabrics include sports denims, specialty cottons and rayons, and standard cottons for women's and children's dresses and sportswear. Mr. Bloomgarden will make his headquarters at 819 Santee St., Los Angeles, Calif.

Scottsville Plant Safety Record

Seven years without a disabling accident was a record established recently by the 300 employes of U. S. Rubber's Scottsville, Va., plant. Since its construction in 1946, the tire cord plant has operated for more than 4,000,000 man-hours with a perfect safety record and has received over this period a total of 18 national, state, and company safety awards. The facility is part of the company's textile division, in which capacity it converts rayon yarn into fabric for use in tires.

Reinforced Polyester in Trucks

Glass fiber reinforced Vibrin polyester resins, product of Naugatuck Chemical Division, Naugatuck, Conn., is being used in the construction of truck and trailer bodies by Seaboard Transportation Co., Antioch, Calif., and by Strick Co., Philadelphia, Pa. Bodies 24 by eight by eight feet in size have been made by Seaboard for use on conventional trailer chasses. Four sections (two sides, the front, and the top) are molded with ribs dispersed in the resin impregnated fiber. After molding, the sections are assembled on to the chassis and are bonded together by resin and mechanical means.

Strick employs the reinforced resin as eight- by four-foot skylight sections in three of every four bodies produced. The sections are built into the roof of the trailers to increase the amount of light on the cargo. Trailer sides, interior liners, and doors made of reinforced plastic are also employed in the vehicles.

Advantages to be gained by use of these materials in this capacity include decreased weight, translucency, and elimination of corrosion and dents.

Radiant Heating Panel Distributors

Peninsula Radiant Glass Heating Corp., 22 S. Addison St., Richmond, Va., has been named distributor for Uskon electrical radiant heating panels manufactured by U. S. Rubber in all counties of that state east of the Shenandoah Mountains.

In another such appointment Brownell Distributors, Inc., 308 Canal St., New York, was named distributor for the panels in seven counties of lower New York State.

The Uskon panel, measuring 1/16-inch thick, uses the rubber of the panel as a conductor of electricity in the heating of rooms without the use of pipes or chimneys.

Harris Products, builder of thermal-pressure processing chambers featuring the Harris quick-operating door, recently moved from 1850 E. 58th St., Los Angeles 1, Calif., to 11522 Long Beach Blvd., Lynwood, Calif.

New Cellulose for Rayon

A new type of chemical cellulose, a white fibrous substance called Rayocord-X, intended for use in the manufacture of rayon yarn, was introduced by Rayonier, Inc., New York, N. Y., at a press luncheon at the Hotel Pierre, New York, September 24. The new product is a high alpha cellulose obtained from wood by the sulfite process and is to be sold to tire cord and textile manufacturers.

Rayocord-X is specially recommended for processing by high-stretch spinning techniques, during which process the uniform chain lengths of the cellulose form a highly ordered pattern. Rayon yarn is thereby produced which has the reported properties of high tenacity, high fatigue life and shock resistance, high strength, toughness, and resistance to laundering.

Performance data supplied by the company indicates that this tire cord, after twisting, exceeds the tensile strength values for conventional rayon tire cord by more than three grams per denier and will stretch 100% or more during the spinning process (*versus* 30% stretch for textile yarns and 60% stretch for tire cord of current manufacture). Untwisted rayon made from the Rayocord-X by the high-stretch process possesses tensile strengths up to four grams per denier (*versus* a figure of two grams per denier for conventional rayon fibers). The wet yarn is reported to swell up to 75% (*versus* 150% wet expansion for current material). Finally, the property of moisture transmission is claimed for the material.

Rayonier has sulfite facilities sufficiently large to produce quantities of the new cellulose to satisfy industrial needs both here and abroad. In addition to the applications considered above, rayon cord produced by this process is reported capable of use as reinforcing material in conveyor belts, and the cellulose acts as a reinforcer in plastics such as melamine. Shorter sections of the cord are said to be, if anything, stronger than long lengths. Price of Rayocord-X is expected to approximate that of the company's present cellulose product, Rayocord, which is about 5% above conventional cellulosics. The major problem anticipated by Rayonier in selling the product concerns expected reluctance on the part of the yarn manufacturers to convert to high-stretch spinning equipment.

New Goodyear Warehouse

Goodyear Tire & Rubber Co., Inc., Akron, O., recently completed what is reported to be the South's largest industrial warehouse at Gadsden, Ala. The one-story structure measures 1,000 by 400 feet and will serve as a field warehouse for finished products of the company to be sold throughout seven of the southern states. More than 100 persons will be employed at the facility, which is on a 24-acre site and is capable of handling 16 railroad cars and 20 trucks at the same time.

Cutler and Mercer Advanced

J. L. Cutler has been appointed technical consultant in the hose sales department, and R. E. Mercer has been named to succeed him as assistant manager of that department.

Cutler has had wide experience in technical, development, and sales work since joining Goodyear in 1928 in the design division of industrial products division. He has worked in hose development and hose sales and in 1945 advanced to senior staffman in the hose sales department.

Mercer started with Goodyear in 1947 as a field office trainee and for the next two years served as industrial products sales trainee. In 1949 he was assigned to Duluth, Minn., as a field representative and was transferred to Des Moines in the same capacity in 1951.

Luxembourg Honors Thomas

E. J. Thomas, president of Goodyear, was recently presented with a top Luxembourg honor as a "token of high esteem" from Grand Duchess Charlotte for aiding relations between the United States and the Grand Duchy. The cross and title of Grand Officer of the Order of Oak Wreath were awarded to Mr. Thomas in Akron by Pierre Dupong, prime minister of that country, who represented the Grand Duchess at the ceremony.

Speaks at Farm Equipment Institute

Mr. Thomas, in a speech to 600 executives and representatives of farm equipment manufacturers attending the sixtieth annual Farm Equipment Institute at Chicago, discussed rubber's stake in agriculture. He paid tribute to the farmer and pledged his company to keep fully abreast of the problems of the equipment industry.

Rayon Transmission Belts

Transmission belting constructed with nylon plies is rapidly replacing similar belting made with cotton plies, according to M. W. Sledge, manager of belting sales for Goodyear. Both laboratory and field test programs over the past four years have reportedly demonstrated the superiority of belting which employs either a rayon-cotton duck combination or straight rayon over belts which use conventional duck plies.

Rubber in Cars

A survey by Goodyear engineers indicates that since 1920 the number of rubber parts used in the average car has increased from 150 to approximately 540. The weight of these parts has correspondingly increased from 33 to 100 pounds, excluding the 138 pounds of tires and tubes.

Dimer Acid Production Up

An expansion in the facilities for producing dimer acid, a long-chain dibasic acid, and an improvement in the processing methods to yield a lighter-colored product have been announced by Emery Industries, Inc., Carew Towers, Cincinnati, O. The new production will be designated Empol 1022 polymerized fatty acid and, shortly after full-scale production of this material is achieved, will completely replace Emery 955 dimer acid.

Precision Scientific Co., Chicago, Ill., has elected Chester A. Warner chairman of the board and John J. Kinsella to the presidency to succeed Mr. Warner, who now fills the vacancy caused by the recent death of Walter W. Pitann, founder and chairman of the board. Other elections made Arthur Pitann vice president and secretary to fill the position vacated by Mr. Kinsella. Mr. George E. Bader and Edmund E. Tice were elected vice president in charge of manufacturing and vice president in charge of finances, respectively.

Celanese Adds to Staff

David B. Hertz has been named director of engineering of the plastics division of Celanese Corp. of America, 180 Madison Ave., New York 16, N. Y.

He joined the company in 1945 and for a time was assistant professor of industrial engineering at Columbia University. Dr. Hertz is also the author of "The Theory and Practice of Industrial Research."

Dr. Hertz announced the following appointments to his staff: C. Myers as head of the utilities and maintenance analysis section; A. P. Berger as head of the facilities and estimates section; and H. Weber as head of the design section.

W. R. Porter has been appointed manager of government business for the plastics division.

W. E. Eaton and E. F. Seitz, Jr., have joined the staff of the market development department of the division.

Three additions to the Belvidere, N. J., plant of the division also were made last month: Edward R. Horan, head of the personnel and safety department; George Pokrivchak, to the technical control group; and Robert E. Stanton, to the engineering department.

Richard J. Savage has been named sales manager of the Marco products department, plastics division.

Frank W. Turner has been named sales service engineer of the Marco department for the purpose of developing applications of reinforced polyesters in the building of tanks, pipes, and other equipment in the chemical, oil, and transportation industries. Mr. Turner is being transferred from the central engineering department of the company to the Marco plant at Linden, N. J.

New West Coast Office

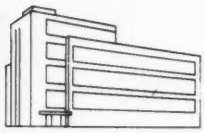
Celanese has opened for its plastics division a new West Coast district office at 3460 Wilshire Blvd., Los Angeles, Calif., and a new branch office at 607 Market St., San Francisco. The Los Angeles office will be under the direction of District Manager R. J. Hough, and the San Francisco branch, in charge of W. R. Cooper.

Solvent in Tank-Car Lots

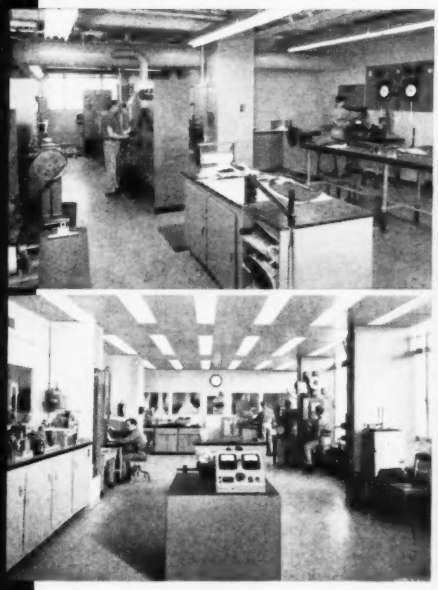
Methac solvent, a high ester blend of methyl acetate and methanol produced by American Monomer Corp., Leominster, Mass., is now available in tank-car lots. The product, reported to be a powerful thinner, solvent, and cleaner, is marketed with the following specifications: weight, 7.4 pounds per gallon; minimum acetate content, 60% by weight; and boiling range, 55-65° C. Properties of the blend indicate its conversion to methyl acetone upon the addition of acetone, and its separation into an 82% methyl acetate azeotrope and pure methanol upon distillation.

Hardman Subsidiary Formed

H. V. Hardman Co., Inc., Belleville, N. J., has announced the formation of a subsidiary corporation known as DPR, Inc. The new firm, which will concentrate on the development, manufacture, and sale of depolymerized rubber (DPR) and its compounds, will be housed in new units adjacent to the parent company's plant in Belleville. The laboratory of DRP, Inc., will be in charge of Henry Pande, the company's development chemist.



On YOUR Staff



Customer service work is carried on constantly in the Compounding Laboratory (top) and Physical Testing Laboratory (bottom).

Basic research on plasticizers is one of the principal functions of the Organic Laboratory.

- **Cabflex Di-OP** *di-iso-octyl phthalate*
- **Cabflex DCP** *di-capryl phthalate*
- **Cabflex Di-OA** *di-iso-octyl adipate*
- **Cabflex DDP** *di-decyl phthalate*
- **Cabflex DDA** *di-decyl adipate*
- **Cabflex Di-BA** *di-iso-butyl adipate*
- **Cabflex Di-OZ** *di-iso-octyl azelate*
- **Cabol 100** *hydrocarbon oil plasticizer*

CABOT

● **CABOT organic chemists,** with the aid of modern instruments of research, work constantly to improve the present range of Cabot plasticizers and to develop new plasticizers for the future. In the Compounding and Physical Testing Laboratories, still other Cabot chemists compound plasticizers into many different plastics stocks . . . test them in hundreds of different ways. A 1500 square foot Pilot Plant Area offers opportunity for the evaluation of processing techniques on a semi-plant scale.

● The new Cabot Research and Development Laboratories at 38 Memorial Drive, "Research Row", Cambridge, Massachusetts, are extensively equipped and expertly staffed to offer complete technical customer service in the field of plastics manufacture.

● *If you are interested in learning more about our facilities, or would like technical information or samples of any one or all of our plasticizers, address*

Plasticizer Division
GODFREY L. CABOT, INC. 77 FRANKLIN ST., BOSTON 10, MASS.

Atlas Tires from Seiberling

Seiberling Rubber Co., Akron, O., and The Standard Oil Co. of Ohio on September 1 announced the signing of a contract making the local rubber company a major supplier of Atlas tires sold in Sohio's service stations throughout the state.

Production of tires for the oil company, according to J. P. Seiberling, president of the rubber firm, has been under way for several months on a tentative agreement while contract details were being negotiated.

The contract was signed by Mr. Seiberling for his company and by S. H. Elliott, vice president in charge of marketing, for Standard Oil. Amount of the contract was not disclosed.

The announcement said that Seiberling was selected to produce Atlas-brand tires for sale by Standard's retail outlets, in line with the oil company's policy of producing its merchandise, when possible, in states where it would be sold.

Cyril J. Marx, in charge of special distribution sales for Seiberling, has been named manager of oil company sales. Marx joined the company in 1930 and served as manager of district offices in Chicago, Dallas, Kansas City, New York, and Boston. He resigned in 1940 to join Frankfort Distillers as St. Louis district manager and was later elevated to a vice presidency. In 1949 he rejoined Seiberling and was assigned to special distribution problems, with headquarters in Chicago.

Buzzard Succeeds Wolcott

Daniel R. Buzzard has been promoted to manager of merchandise distribution for Seiberling to replace Oliver H. Wolcott, who retired September 1.

Both Buzzard and Wolcott are veterans of the Seiberling organization. When F. A. Seiberling founded the company in 1921, Wolcott set up the merchandise distribution department, and Buzzard became assistant manager a few weeks later.

Jesse H. Bert, an employe in merchandise distribution for the last 17 years, moves up as assistant manager of the department.

Perkins in Secretary's Office

Rodney L. Perkins, an attorney, has joined Seiberling, and been assigned to the secretary's office. During the past two years Perkins was employed by the federal government in Washington. He has also served on the legal staffs of Blaw-Knox Co. and Pepsi-Cola Co. He is a member of the Ohio State and New York State Bars and is co-author of "Economy in National Defense," a book recently published by the U. S. Government Printing Office.

Du Pont Advances Several

Several promotions and new appointments were announced September 9 by the rubber chemicals division of E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

William H. Ayscue, rubber chemicals sales supervisor in the Chicago area, has been transferred to the division's home office in Wilmington to the newly created post of assistant sales manager for rubber chemicals.

Russell A. Kurtz, technical development representative in the Akron district, replaces Mr. Ayscue in Chicago.

Richard W. Malcolmson, technical sales and development representative in Houston, Tex., fills Dr. Kurtz' place in the Akron lineup and will cover sales development in the Detroit territory.

Photo by Kochne

William H. Ayscue

A. J. Hawkins, Jr., goes from technical sales in Chicago to take over Mr. Malcolmson's post in Houston and is succeeded in Chicago by John J. Lawless, since early 1952 neoprene research chemist at the Deepwater Point, N. J., rubber laboratory.

Frank B. Roberts, development group supervisor at the Louisville Neoprene Works, assumes the duties of technical development representative in the Akron district.

Mr. Ayscue joined du Pont in 1935 as a chemist at the Jackson Laboratory, Deepwater Point. A year later he transferred to the rubber laboratory, also at the organic chemicals department's Deepwater Point plant, where he specialized in neoprene latex. In 1938 he joined the rubber chemicals division sales office in Wilmington as a technical demonstrator, became a salesman in 1943, four years later was assigned to the Akron district sales office, and in 1951 was appointed sales supervisor in Chicago.

Dr. Kurtz started with the company in 1942 as a research chemist at the Jackson Laboratory, in 1946 was transferred to the rubber laboratory, the following year was named technical sales representative for the Wilmington district, was appointed technical development representative in 1952, and was assigned to the Akron office shortly afterward.

Mr. Malcolmson became a rubber chemist with Goodyear Tire & Rubber Co., Akron, in 1943, working on compound development for bullet-sealing oil cells, fuel and oil cell fittings, motor mounts, torsion springs, rubber flooring, and hose. He came to du Pont in 1947 as technical sales correspondent, later served as a technical editor on rubber chemicals and neoprene literature, and was assigned to sales and development in 1952, covering the southwest from Houston.

Mr. Hawkins in 1941 began as a chemist at the Deepwater Point rubber laboratory. From 1942 to 1945, Mr. Hawkins served as a paratrooper in the 82nd Airborne Division. He returned to his old post with du Pont and from 1946 to 1950 was neoprene and rubber chemicals salesman in the Los Angeles area. Since then he has been engaged in technical sales work with the Chicago office.

Mr. Roberts was first (in 1941) a junior engineer at the Chambers Works, Deepwater Point, and in that same year was transferred to the company's Newark (N. J.) Works. In 1942 he was assigned to Remington Arms Co. for process development work. Between 1944 and 1950, Mr. Roberts was an engineer and group supervisor engaged in process improvement activities at the Chambers Works. He was next appointed group supervisor for engineering development of neoprene processing at the Louisville Works and later served in the design division.

Ralph S. Graff has been named technical sales representative for the Wilmington district, to succeed M. A. Youker, who has been transferred on special assignment to the division's rubber laboratory at Deepwater Point. Mr. Graff will handle neoprene and rubber chemicals sales in the southern portion of New Jersey, eastern half of Pennsylvania, Delaware, Maryland, Virginia, and the District of Columbia. He served in the Signal Corps during World War II and was later a process development engineer with Goodyear. He joined du Pont in 1949 as a compounder at the rubber laboratory and since early 1952 has been technical sales correspondent in the Wilmington office.

Benson with Rubarite

Appointment of Jewell R. Benson to chief engineer of Rubarite, Inc., a newly formed company which produces a new synthetic rubber product for use in rubberized asphalt for paving and other purposes, was announced last month by H. B. Pullar, president of Rubarite.

Full-scale production of Rubarite started at Magnet Cove, Ark., early in September.

Rubarite, Inc., is owned jointly by The Goodyear Tire & Rubber Co., The National Lead Co., and Bird & Son, Inc.

Benson, who will headquarter in the company's western office in Denver, Colo., formerly served as special projects engineer of The Asphalt Institute on a national basis. He was resident engineer, asphalt research engineer, and bituminous engineer for the State Highway Commission of Kansas for more than 13 years. He also was bituminous engineer and head of the bituminous laboratory of the U. S. Bureau of Reclamation in Denver.

Benson is past president of the Association of Asphalt Paving Technologists and a registered professional engineer in Kansas. He is a member of the Kansas Engineering Society and the Highway Research Board.

Grant to ATA Foundation

The contribution of $25,000 by Dayton Rubber Co., Dayton, O., to the ATA Foundation, Inc., Washington, D. C., has been announced. The Foundation is a trucking industry organization designed to inform the public of the motor transport industry in this country. The Dayton grant is intended to further the educational activities of the Foundation.

Wellco Shoe Corp., Waynesville, N. C., has completed its new building for the manufacture of rubber. This new addition, including building and machinery, cost approximately $100,000 and enables the company to work far more efficiently than was possible in the past. Wellco now manufactures all rubber compounds needed in the manufacture of its "Foamtread" footwear.

CIRCOSOL-2XH IS VERSATILE

. . . a process aid

Circosol-2XH has extremely wide application because of its relatively low staining properties, and because it assures the most favorable physical characteristics in the finished vulcanizates.

. . . an elasticator

Circosol-2XH greatly improves the rebound properties of GR-S vulcanizates.

. . . a polymer extender

Circosol-2XH assures uniformity, with a minimum of downgrading.

Because of its versatility, Circosol-2XH is ideal for use in such diversified products as light colored footwear, hospital sheeting, white seals and gaskets, white sidewall tires, sponge rubbers and toys.

Let us tell you the complete story of Circosol-2XH. Write for technical bulletin or have our representative call. SUN OIL COMPANY, Philadelphia 3, Pa., Dept. RW-10.

INDUSTRIAL PRODUCTS DEPARTMENT

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PHILADELPHIA 3, PA. ◆ SUN OIL COMPANY LTD., TORONTO & MONTREAL

Forms New Divisions

Promotion of two veteran executives to vice presidencies and formation of two new autonomous divisions in Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, O., were announced September 14 by President Raymond F. Evans following a board meeting.

W. H. McConnell, director of sales, has been elected vice president—sales. C. E. Lyon, works manager of Diamond's electrochemical plant at Houston, Tex., also becomes a vice president.

The two new autonomous divisions are the plastics and agricultural chemicals division, with A. L. Geisinger, a vice president, as general manager of the division; and the chromium chemicals division, with Frank W. Jarvis as general manager. Mr. Jarvis since 1951 has been president of Diamond Magnesium Co., a subsidiary of Diamond Alkali, and previously had been president of the Fairport, Painesville & Eastern Railroad.

Mr. McConnell in 1928 took a job as a clerk in the sales department of Diamond in Pittsburgh and in 1931 was made a salesman with Benner Chemical Co., then Diamond's sales outlet for Chicago and the Midwest. In a series of important promotions, McConnell subsequently became vice president and sales manager of Benner in 1944, assistant director of sales of Diamond Alkali in 1945, and director of sales for Diamond in 1946.

Mr. Lyon's promotion climaxes a long career in the chemical processing field. From 1919 until 1931 he was engaged in research, production, and sales with the Hooker Electrochemical Co. at Niagara Falls, N. Y. He then joined Diamond for a four-year period as a chlorine sales and service representative before going with Niagara Alkali Co., also at Niagara Falls. Mr. Lyon was assistant superintendent of production there, but resigned in 1941 to return to the Diamond organization at its Painesville, O., plant, this time as head of the chlorine department. Five years later, when work was launched on the Houston plant, he was selected to head that operation.

Calco Ad Departments Merged

Ernest K. Hunt, manager of advertising and public relations of American Cyanamid Co.'s Calco Chemical Division, Bound Brook, N. J., will assume, in addition to his other duties, direction of advertising and sales promotion for the textile resin department and will continue as manager of the household products department and of the packaging development section.

R. L. Greason has been appointed advertising and sales promotion manager of the textile resin department, reporting directly to Mr. Hunt.

The latter, for many years with the paper industry, in 1943 became advertising manager of Calco Chemical Division and manager of the household products department.

Heads Market Research and Development

Alden R. Loosli has been named manager of the newly formed market research and development department at Calco and remains assistant to the general manager.

The new department, which will include the existing market research department, will conduct market surveys and make economic studies for new products and their uses, and proposed expansion of established products, and promote initial sales of new products requiring market exploration. Wiley W. Carr will continue in his position of manager of the market research section of the new department.

Ernest K. Hunt

Mr. Loosli started with Calco in 1937 as a student trainee and has held supervisory positions in various production departments. After a period of sales training he was appointed assistant sales manager of the rubber chemicals department in 1947 and in 1950 was named assistant manager of the intermediate and rubber chemicals department when they were consolidated. In January of this year he was made assistant to the general manager.

McCullough New Calco Representative

R. W. McCullough has been appointed technical field service representative to the rubber compounding industry. He comes to Calco with a wide background of experience in rubber manufacture. He started at the Firestone Tire & Rubber Co., Akron, O., as an analytical chemist and later was made chief chemist in the company's South African operations. In 1950 he became Cleveland area sales representative for the industrial chemicals division, American Cyanamid Co., and since 1952, for the Arizona Chemical Co., a Cyanamid subsidiary.

Plant Maintenance Show to Chicago in 1954

The fifth annual Plant Maintenance & Engineering Show, formerly called the Plant Maintenance Show, will be held in Chicago, Ill., January 25-28, 1954. The exposition will take place at the International Amphitheatre and will occupy more than 100,000 square feet of exhibit space. Claimed to be one of the five largest annual industrial shows to be held in the country, the exposition will contain the exhibits of approximately 350 companies, 310 of which are already registered.

Concurrently with the show, the Plant Maintenance & Engineering Conference will be held at the Hotel Conrad Hilton. The conference has broken attendance records for technical sessions of this type, with more than 2,100 persons in attendance at the 1953 meeting.

Advance registration cards may be obtained from the producer of the show, Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

Tubeless Tire Output To Rise

Facilities for the manufacture of tubeless tires will account for a substantial part of a $22-million expansion program planned this year by The B. F. Goodrich Co., Akron, O., it was revealed last month by Arthur Kelly, president of the company's tire and equipment division.

A total of $13.5 million is being used to expand Goodrich tire manufacturing plants at Oaks, Pa., and Tuscaloosa, Ala., he said. The company recently completed other major expansion at its tire manufacturing plants in Akron and at Los Angeles, Calif., and Miami, Okla.

The company said that production is already more than double that of last year's figure, and that more than two million tubeless tires have been put on the road since Goodrich introduced these tires in 1947.

Last year tubeless tires made the greatest sales gain of any tire in the replacement market, Kelly declared. He pointed out that while unit sales of all makes of passenger-car tires increased 34%, tubeless tires gained 90%. Since their introduction, tubeless tires have carried Americans more than 12 billion blowout-protected car-miles, he added.

Plasticizer Plant Addition

Increased production capacity and improved product quality of Hartflex 500, a plasticizer manufactured by Hardesty Chemical Division of W. C. Hardesty Co., Inc., 41 E. 42nd St., New York 17, N. Y., are expected to result from the recently completed expansion of the company's facilities which produce this material. Among the improved qualities claimed for the current product are less odor than most commercial grades of dioctyl phthalate and very pale color.

New Geon Uses

Vinyl Coated Ignition Harness

Ignition harnesses, used to carry a low-voltage current from the magneto to the transformer coil on Wasp aircraft engines, are being coated with a new type of Geon vinyl latex, product of B. F. Goodrich Chemical Co., Rose Bldg., Cleveland, O. The harness, consisting of an insulated conductor wrapped in nickel braid and covered with a nylon fabric coated with the Geon compound, is manufactured by the Bendix Aircraft Corp., Sidney, N. Y. Various properties of the vinyl latex coating, said to provide the engines with increased safety and decreased maintenance costs, include its non-support of combustion and its excellent resistance to abrasion, weather, water, and inorganic and organic chemicals.

Vinyl-Cotton Fiber Fabric

A non-woven fabric bag into which a desiccant for absorbing moisture is placed is being manufactured by Wellington Sears Co., New York, of cotton fibers bound together with liquid Geon vinyl latex. The Lantuck fabric, as it is known, is said to be capable of permitting the passage of moisture through it and, in this way, controls the humidity of the surrounding air. Current use for the bag with desiccant involves crating the product with equipment to be protected from moisture in shipment.

how long did it take to get from here ...to here?

Answer: 13 years

The first practical rubber tire specifically designed for farm tractors was developed in 1932. By 1945, thirteen years later, two other important developments had been announced: (1) the world's heaviest and (2) the world's largest rubber tires had been produced—both for special tractor-type equipment.

Monsanto has served the rubber industry for many years, with such chemicals as Thiuram accelerators: Thiurad, Ethyl Thiurad, and Mono Thiurad. These three accelerators are offered in powder and pellet form. Write for a copy of Monsanto's rubber chemicals catalog, which includes complete specifications for the Thiurads. MONSANTO CHEMICAL COMPANY, Rubber Service Department, 920 Brown Street, Akron 11, Ohio.

MONSANTO CHEMICALS FOR THE RUBBER INDUSTRY

ANTIOXIDANTS

Flectol* H
Santoflex* B
Santoflex BX
Santoflex 35
Santoflex AW
Santowhite* Crystals
Santowhite MK
Santowhite L

ALDEHYDE AMINE ACCELERATORS

A-32
A-100

MERCAPTO ACCELERATORS

Santocure*
El-Sixty*
Mertax (Purified Thiotax)
Thiotax (2-Mercapto benzothiazole)
Thiofide* (2,2' dithio-bis benzothiazole)

GUANIDINE ACCELERATORS

Diphenylguanidine (D.P.G.)
Guantal*

ULTRA ACCELERATORS FOR LATEX, ETC.

R-2 Crystals
RZ-50
RZ-50-B
Pip-Pip
Thiurad* (Tetramethyl-thiuram disulfide)
Ethyl Thiurad (Tetraethyl-thiuram disulfide)
Mono Thiurad (Tetramethyl-thiuram monosulfide)
Methasan* (Zinc salt of dimethyl dithiocarbamic acid)
Ethasan* (Zinc salt of diethyl dithiocarbamic acid)
Butasan* (Zinc salt of dibutyl dithiocarbamic acid)

SPECIAL MATERIALS

Thiocarbanilide ("A-1")
Santovar*-A
Santovar-O
Sulfasan R
Insoluble Sulfur "60"

COLORS

REODORANTS

Reg. U. S. Pat. Off.

MONSANTO
CHEMICALS—PLASTICS

SERVING INDUSTRY...WHICH SERVES MANKIND

Ucon Synthetic Lubricant

The use of Ucon synthetic lubricant in the transmissions of automatic latex-foam machines is reported to increase the life of the shaft seal by three to six months. Petroleum oil had previously been used in this capacity, but has the disadvantage of reacting with latex which leaks through the shaft seal to form a hard abrasive substance. This abradant scores the shaft and hardens the seal, causing the latter to wear out within a few days. The synthetic lubricant, however, is said to coagulate the latex and, in this way, prevent additional leakage and wear on the pump and shaft. Ucon is a product of Carbide & Carbon Chemicals Co., division of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.

Price Changes for Polyethylene Glycols

Carbide & Carbon has announced lower prices for nine different grades of Carbowax polyethylene glycols. These include the glycol liquids designated 200, 300, 400, and 600 and the solids 1000, 1500, 1540, 4000, and 6000. The two most useful properties of the materials, complete water solubility and non-volatility, have resulted in their employment in the rubber industry as release agents in molding foam rubber and as tire-bag lubricants.

Witco Expanding in West

Witco Chemical Co., 260 Madison Ave., New York 16, N. Y., recently purchased plant facilities in the Los Angeles, Calif., area and plans to install manufacturing equipment in the near future. This expansion of Witco's present production facilities has been undertaken to supply the Pacific Coast area locally instead of meeting requirements by shipment from distant plants. Increasing sales of Witco products on the West Coast has made this a logical development in Witco's expanding manufacturing program.

Making Foam Pillows

The production of a new line of premium-size molded latex foam sleeping pillows and decorator pillows was begun recently by Amertex Mfg. Co., New York, N. Y. The entire plant of the company, in Portsmouth, Va., has been converted to large-scale manufacture of these items at a production rate of approximately 18,000 a week. It is reported that the bulk of the output would be sold to pillow manufacturers, with a restricted amount of the decorator pillows sold as uncovered merchandise directly to large retail outlets.

Plastic Greenhouse

Plans for a greenhouse utilizing shatterproof panels of reinforced plastic (polyester-fibrous glass) are being offered to potential customers by Monsanto Chemical Co., St. Louis, Mo. Use of these panels in the 16- by 24-foot building makes possible several structural innovations. The panels themselves are claimed to be capable of transmitting 80-90% as much light as pure air and are reported to have many advantages over glass, including low heat transmission (40% that of glass), elimination of hail insurance, etc.

Top Executives at Sun Rubber *(Left to Right)*: W. R. Lantz, W. T. Davis, T. W. Smith, Jr., W. S. Raymer, Jr. and T. B. Roberts

Sun Rubber Expanding

The Sun Rubber Co., Barberton, O., which this year is marking its thirtieth anniversary, through President Tom W. Smith, Jr., reports that sales volume is running about 100% above last year's figure, and a banner year is anticipated by the company.

Sun, which makes chiefly rubber toys, about a year ago entered also the vinyl plastic field and is now in mass production on plastic dolls, balls, and other toys. Output of the firm's rubber athletic equipment likewise is being increased. Plant capacity made available by changing to plastics for some items is being utilized for industrial rubber goods. In a further diversification program the company is manufacturing rubber molding and other goods for the automotive, refrigeration, and appliances industries. The company currently has more than 100 products on its list, and the number is growing steadily.

The firm now has nearly 1,000 employes operating in two shifts in some departments and in three in others.

Mr. Smith at the same time announced the appointment of two new vice presidents, Willard T. Davis and Walter S. Raymer, Jr.

Mr. Davis, now vice president and factory manager, comes from General Aniline Film Corp., where he spent nine years. Previously he had been with The Goodyear Tire & Rubber Co. for 12 years.

Mr. Raymer, formerly assistant secretary-treasurer and now vice president and controller, started with Sun 15 years ago and before that had been with The B. F. Goodrich Co.

William R. Lantz, who was recently made vice president and director of purchases, assumed the purchasing assignment with Sun seven years ago, after 17 years with Goodrich.

Tom B. Roberts is Sun's vice president in charge of sales promotion.

Silicone Rubber in Compasses

Silicone rubber parts are currently being used to protect Army field compasses from the extremes of arctic weather, from moisture, and from physical shock. SE-450 silicone rubber, product of General Electric Co., Pittsfield, Mass., is molded into shallow cups which are pressure fitted inside the aluminum case to seal the parts of the instrument. The Marine Compass Co., manufacturer of the Lenastic compass, reports that the use of this elastomer enables the instrument to meet Army specifications for operation over a temperature range from —65 to 125° F., and storage from —80 to 160° F.

Smokeless JATO Unit

The General Tire & Rubber Co., Akron, O., through its president, W. O'Neil, recently was honored for its latest contribution to aviation with the successful development of the new smokeless JATO by its subsidiary, Aerojet-General Corp., Azuza, Calif., and Cincinnati, O. The commendation was contained in a letter from Rear Admiral T. S. Combs, USN, and cites the six years of effort which preceded the successful development of the all-weather, smokeless JATO (Jet Assist Take-Off) Unit.

Industrial Products Executives Promoted

Three key changes in the sales organization of the industrial products division at General were announced last month by Charles P. Bender, general sales manager of the division.

William A. Wright has been named sales manager of automotive products; Jack L. Shafer is the new sales manager of mechanical products; while Clarence W. Tyte has been appointed manager of sales operations for the division. They will all headquarter at the Wabash, Ind., plant, reporting to Bender.

Wright has 30 years' experience in the rubber industry and since 1937 has been engaged in sales work at Wabash.

Shafer, former assistant works manager of Jack & Heintz in Cleveland, joined General Tire at Akron last year.

Tyte has been associated with the rubber industry for more than three decades. He started with General in 1937 at Wabash and most recently served as factory manager of the division's Logansport operation.

Adds to Technical Staff

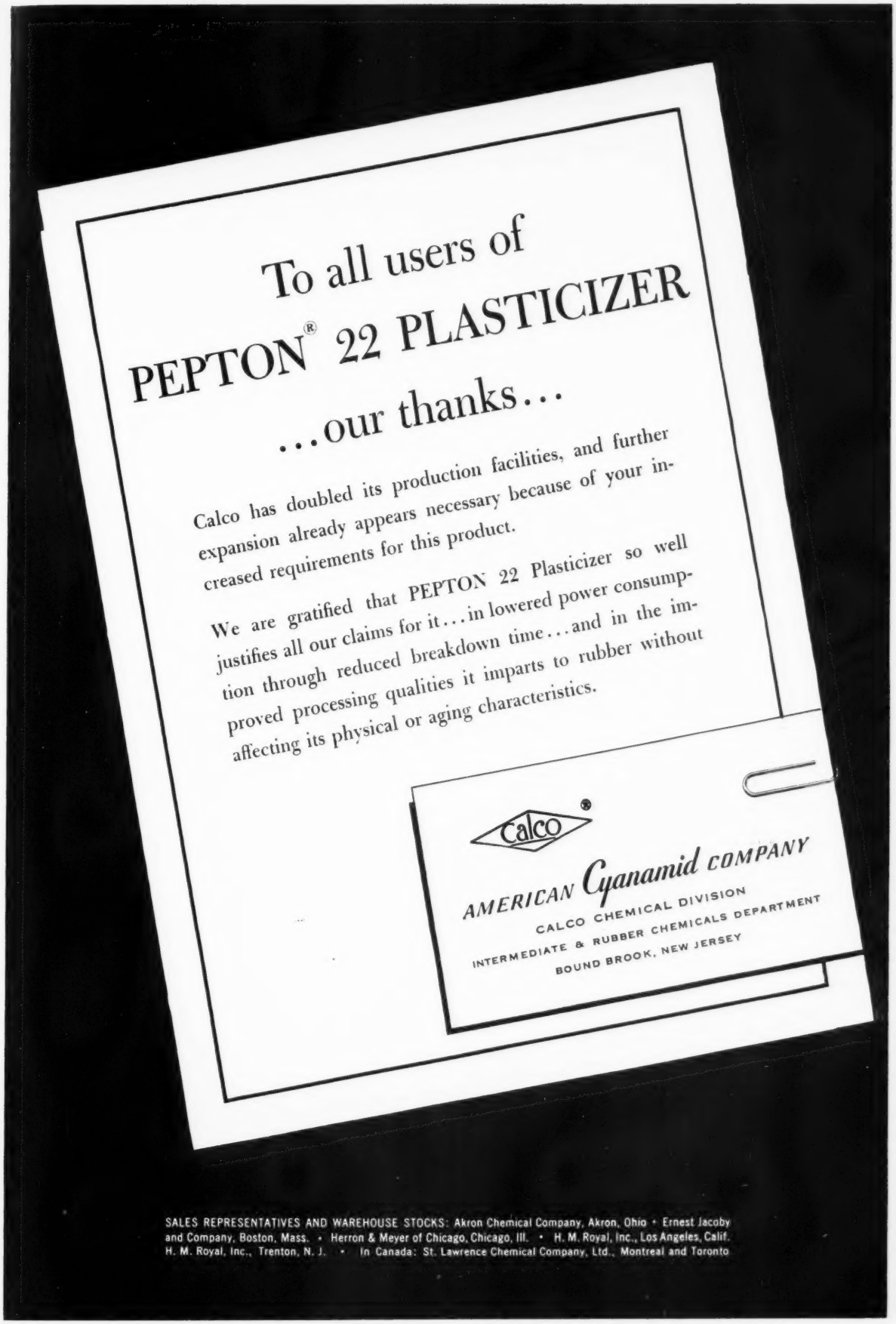
The technical service department of Binney & Smith Co., 41 E. 42nd St., New York 17, N. Y., was recently enlarged by the appointment of Lloyd D. Treleaven. With the exception of two years in the Army, Mr. Treleaven was with Goodyear Tire & Rubber Co. since 1946. His last position with this company was chief chemist at the Topeka, Kans., plant. In his new assignment he will be in Binney & Smith's New York office.

To give wider technical coverage to the Midwest area the company has also added Alden Davis to its staff at Akron, O. Mr. Davis has had wide experience in rubber compounding and processing. While he has concentrated heavily in tire work, he has also been active in many phases of mechanical goods compounding. He became a research chemist with Dunlop Tire & Rubber Co., Buffalo, in 1937.

Token for Plant 2 Employes

The Firestone Tire & Rubber Co., Akron, O., has presented to the 3,100 employes of Plant 2 a key chain with attached medallion in appreciation of their efforts in setting the world safety record for the rubber industry. The medallion carries an inscription appropriate of this achievement.

The key chains were given to the employes following the presentation of a special Award of Honor to Plant 2 from the National Safety Council. The award cites the plant's operation for 6,542,463 hours from June 24, 1952, to June 12, 1953, without a disabling injury.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SALES REPRESENTATIVES AND WAREHOUSE STOCKS: Akron Chemical Company, Akron, Ohio • Ernest Jacoby and Company, Boston, Mass. • Herron & Meyer of Chicago, Chicago, Ill. • H. M. Royal, Inc., Los Angeles, Calif. H. M. Royal, Inc., Trenton, N. J. • In Canada: St. Lawrence Chemical Company, Ltd., Montreal and Toronto

NEWS ABOUT PEOPLE

Silicosis Elimination Program

Not a single new case of silicosis has been reported at the New Castle, Pa., plant of United Engineering & Foundry Co. since the installation of a safety program designed to protect employes against the dust inherent in casting operations. The program consists of a modern ventillation system and requires all exposed personnel to wear respirators (types and styles of which are chosen by workers). In addition the company, which manufactures equipment and machinery for the rubber and plastics industries, has instituted a medical and health system which provides annual physicals, chest X-rays every four months, and periodic inhalation of aluminum particles to combat any silica which may have entered the respiratory tract of the worker.

Expands Field Staff

The Natural Rubber Bureau, Washington, D. C., has expanded its field staff by appointing three traveling technical engineers to provide free technical assistance to those communities seriously considering laying natural rubber pavement. Inquiries received from highway officials and engineers throughout 38 states have made this expansion necessary.

The three consultants named have had special training in this respect. They are E. H. Brengle, who will cover the East from headquarters in Baltimore; R. E. Davis, covering the central states from headquarters in St. Louis; and W. J. Ryan, assisted by H. K. Fisher, covering the West. The men will travel about their respective territories to accomplish their assignments.

Hewitt-Robins, Inc., Stamford, Conn., has announced that its foam rubber products will be introduced to South America and other foreign markets with a big promotion program to be launched in the near future. The chief products of this line, which up to this time have been sold almost entirely in the United States, are cushioning for automobiles and furniture and pillows for the bedding industry.

Phillips Petroleum Co., Bartlesville, Okla., recently became the thirtieth corporation in American industry to have total assets in excess of $1,000,000,000. Begun in 1917 with assets of $3,000,000, the company has grown faster than any of the other 19 largest oil companies in the activities of natural and liquefied petroleum gases, natural gasoline, and furnace carbon blacks manufactured from oil.

Kentucky Synthetic Rubber Corp., Louisville, Ky., was presented with the Award of Merit from the National Safety Council and the Distinguished Service to Safety Award from the Louisville Safety Council for the completion of 2,000,000 accident-free man-hours over a period of 30 months. The corporation leads all other government operated plants in the synthetic rubber industry in this respect.

Leland D. Smith has been appointed director of transportation for Consolidated Chemical Industries, Inc., with headquarters in Houston, Tex. Mr. Smith has been with the company since 1934.

R. Ray Estes

R. Ray Estes has been added to the research staff of Emery Industries, Inc., Carew Towers, Cincinnati 2, O., and will be connected with the new chemicals department. He comes to Emery from the University of Kentucky where he was assistant professor of chemistry and director of research for seven years. Prior to that time Dr. Estes had been associated with Armour Laboratories, University of Texas, and Emory University.

Thomas C. Tarbox, in the second phase of its sales expansion program, has been appointed by the organic chemicals division of Dewey & Almy Chemical Co., Cambridge, Mass., to head its sales force in the Mid-Atlantic states area. Mr. Tarbox, who will work out of New York, N. Y., will handle sales of all Darex organic chemicals to customers in the paint, chemical, rubber, textile, paper, and other industries in the area. He comes to Dewey & Almy from Esso Standard Oil Co., where he worked with lubricants and fuels. For five years he was with Standard's aviation fuel research group.

Thomas C. Tarbox

Maurice Barr has been promoted to sales manager of Associated Lead & Zinc Co., Seattle, Wash., a corporation owned and operated by The Eagle-Picher Co., Cincinnati, O., and Northwest Lead Co., Seattle. Mr. Barr in 1940 joined Eagle-Picher as technical representative of the pigment division. As such, Mr. Barr lived in Dallas, where he was in close contact with members of the battery, paint, ceramic, rubber, and petroleum industries in five southwestern states. In 1948 he became technical representative for Associated Lead and assumed responsibility for the sales and service operations of the company throughout the West, concentrating again on the battery, paint, ceramic, rubber, and petroleum industries. He later was appointed assistant sales manager for the company. In his new post as sales manager Mr. Barr will be in complete charge of all sales activities of Associated Lead.

Harry L. Darling, formerly developmental sales engineer, plastic products, United States Rubber Co., Chicago, Ill., has joined the Association of National Advertisers, 285 Madison Ave., New York 17, N. Y., as assistant to the vice president in charge of media and research. He succeeds **John Kirk Lee,** now with Permacel Tape Co., as manager of merchandising services. Mr. Darling, who was with U. S. Rubber five years, in his new capacity will serve as secretary of the A.N.A. display steering committee and will expedite work with other A.N.A. steering committees.

Roger G. Bossen has been named manager of The B. F. Goodrich Co.'s general chemical laboratories, Akron, O. He joined the company in 1934 as a chemist in the general chemical laboratory. The following year he was assigned to the laboratory in the Plant 3 chemical plant in Akron and, in 1936, was named a technical superintendent at this plant. A year later he returned to the company's main plant as a raw materials engineer. In 1939 he became a general compounder on all tire division products, and in 1946 was transferred to the tire and tube manufacturing plant at Tuscaloosa, Ala., as manager of compounding. In 1951, Bossen returned to Akron for special assignment to a quality control project in the tire division.

Joseph N. Kuzmick has been appointed coordinator, corporation research and development, by Raybestos-Manhattan, Inc. His duties will extend to all divisions of the corporation, and he will headquarter at Passaic, N. J. Mr. Kuzmick has been with the Manhattan Rubber Division for more than 30 years, during which he has been active in the development of asbestos and sintered metal friction materials, abrasive and diamond wheels, resins, plastic products, and bowling balls.

Paul L. Vinton, supervisor of material requirements at the Los Angeles, Calif., tire plant of United States Rubber Co., retired recently after 49 years of service. Vinton first went to work for the company at the old Hartford Rubber Works in 1904, as a file clerk. When that plant closed in 1929, he was transferred to the Detroit plant and then to Los Angeles in 1931.

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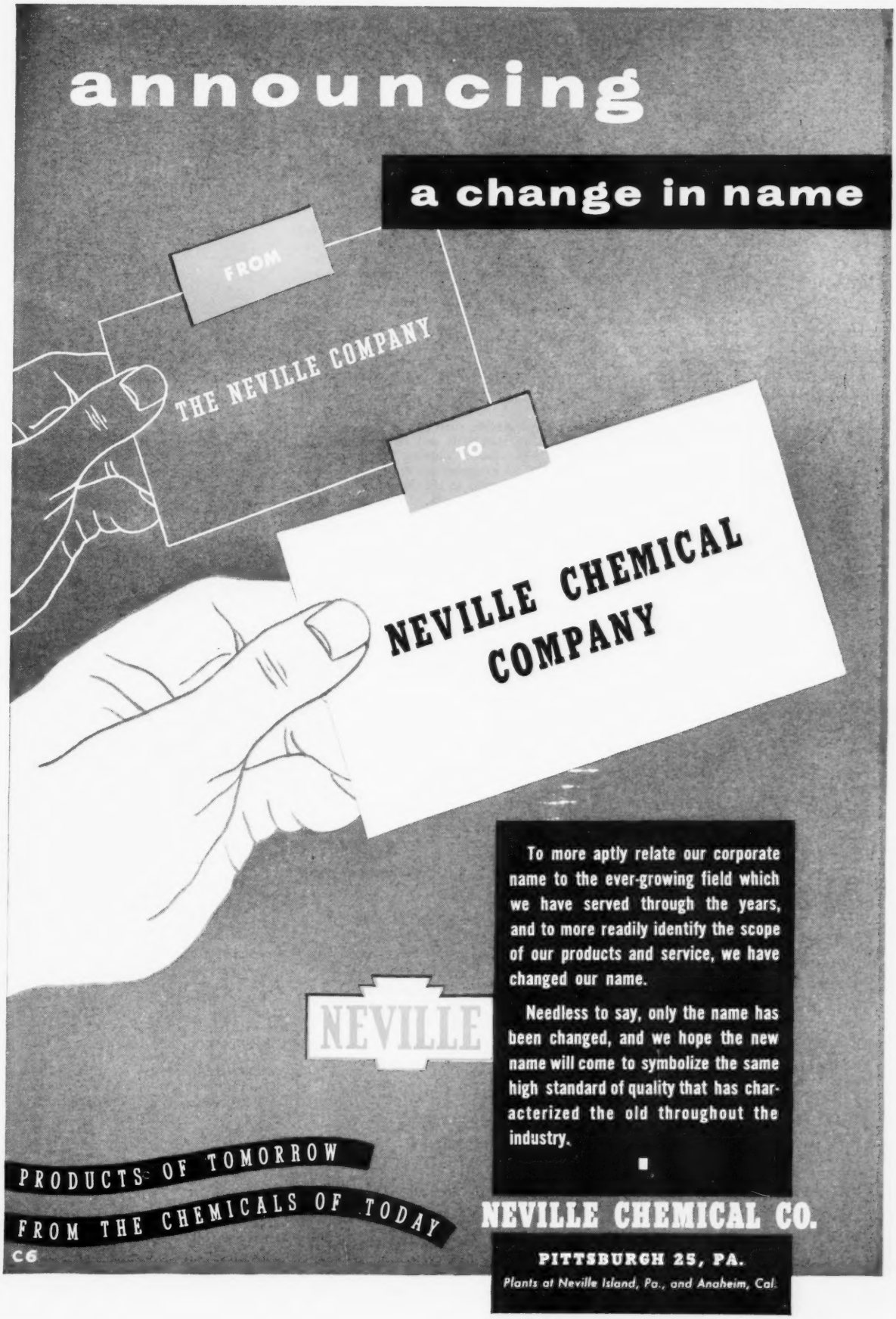
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Needless to say, only the name has been changed, and we hope the new name will come to symbolize the same high standard of quality that has characterized the old throughout the industry.
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PRODUCTS OF TOMORROW
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Plants at Neville Island, Pa., and Anaheim, Cal.

Donald V. Sarbach has been named technical manager of new products development department, The B. F. Goodrich Co., Akron, O. Sarbach joined the rubber company in 1937 in its general chemical laboratories in Akron. In 1938 he transferred to raw materials inspection and development department and then to the department of synthetic rubber research and adhesives. In 1943, Sarbach entered the field of rubber compounding and development, working with sponge rubber, molded, sheeted, and extruded goods, and Koroseal products. In 1947 he was transferred to the company's tire division to do development work on new materials, inner tubes, and the tubeless tire. Next, in 1950, Sarbach was assigned to the BFG works technical group as a development engineer, concentrating on such problems as Koroseal sponge, new blowing agents, ozone resistance of rubber and GR-S, Teflon coatings, and new processes. He was named manager of the company's general chemical laboratories in 1951. Sarbach is a member of the American Chemical Society and its Division of Rubber Chemistry, Akron Rubber Group, Phi Lambda Upsilon, Alpha Chi Sigma, and American Rocket Society.

Donald V. Sarbach

Thomas Robins, founder and chairman of the board of Hewitt-Robins, Inc., Stamford, Conn., was honored recently with a dinner at the Wee Burn Country Club, Darien, Conn., on the occasion of his eighty-fifth birthday. Speaking at the affair, Mr. Robins predicted that the conveyor industry will grow faster in the next 50 years than it has in the last half century. Mr. Robins founded Robins Conveyor Belt Co. in 1896 with a design for the first rubber-covered conveyor belt and belt rollers (idlers). In 1945 the company was merged with Hewitt Rubber Co. into the present Hewitt-Robins, Inc.

Myron T. Shaffer has been named treasurer of International B. F. Goodrich Co. Shaffer joined The B. F. Goodrich Co., Akron, O., in 1919 as a clerk and later moved to the sundries division. In 1921 he went to the bookkeeping department, a few years later was transferred to the credit department, and in 1928 was assigned to New York handling credit duties for International BFG. He returned to Akron in 1931 and until 1937 worked on direct assignment with the treasurer's office. He was general credit manager for International BFG for the past year.

Lester J. Koch, vice president and eastern sales manager for Witco Chemical Co., New York, N. Y., resigned from the firm, September 8, and will reveal his future plans at an early date. Mr. Koch joined the company 15 years ago in the order department. He was named export manager in 1945 and then became assistant to the vice president. He was elected vice president in 1950 and handled national account sales as well as being eastern sales manager.

Arthur W. Fasold has been appointed assistant manager of the commercial research department of Hewitt-Robins, Inc., with headquarters at the company's executive office in Stamford, Conn. Mr. Fasold was formerly a field engineer in Charleston, W. Va., specializing in conveyor systems used by coal mines in that area. He had joined Hewitt-Robins in 1947 after his release from the U. S. Army. He is a member of the West Virginia Society of Professional Engineers.

A. V. Astin, director of the National Bureau of Standards, will be the speaker at the annual dinner meeting of the Akron Council of Engineering & Scientific Societies to be held at the Mayflower Hotel, Akron, O., October 28.

R. W. Van Tuyle, at a recent board meeting of Emery Industries, Inc., Chicago, Ill., was elected a director and to the newly established post of vice president in charge of manufacturing. The continued expansion of the company with the addition of more complex manufacturing operations led to the need of this new position. Mr. Van Tuyle has been with the company 19 years. During most of that period, except for an extended tour of duty in the Chemical Warfare Service, he was research director. In 1949 he became chemical director, in charge of all research, control, chemical engineering, and experimental development activities. In his new capacity, he adds the responsibility for supervising all chemical manufacturing operations, including the ozone-oxidation plant recently announced by Emery. Mr. Van Tuyle has been active in the American Chemical Society, The Cincinnati Engineering Society, and for a number of years has served on the advisory council to the chief of Chemical Corp.

R. W. Van Tuyle

Austin Goodyear

Austin Goodyear, general manager of the rubber and conveyors divisions of Hewitt-Robins, Inc., Stamford, Conn., has been elected a vice president of the company. Mr. Goodyear joined Hewitt-Robins in 1941 and was appointed production manager of its Passaic, N. J., plant six years later. In July, 1952, he became general manager of the conveyors division, which produces conveyor machinery and vibrating screens, and of the rubber division, which makes conveyor belting, hose, and other industrial rubber products. He was elected a director of the company in August, 1952.

Clyde R. Boose, since early 1951 an interviewer at Goodyear Tire & Rubber Co., has been named manager of the Plant I labor department. Boose's position and title are new, as these duties previously had been split among other personnel within the labor division. Associated with Goodyear more than 11 years, Boose started in the factory, became a clerk, then was on the production squadron, and later was an office trainee. Next he entered time-study work and became a time-study engineer.

Edward L. Kropa has joined the staff of Battelle Institute, Columbus, O., as chief chemical consultant and will serve as an adviser to Battelle's varied chemical research groups. He comes from The Borden Co., New York, where he was vice president and chemical director of the company's chemical division. At Borden, Dr. Kropa's principal interests were in various aspects of research and development in casein, wood and metal adhesives, foundry products, molding compounds, and industrial resins. He served concurrently as a consultant to the National Research Council's advisory committee on Quartermaster problems. He had been employed as chemist to the head of the resins and plastics section of American Cyanamid Co.'s research division in Stamford, Conn., prior to joining Borden. His studies at Cyanamid in the fields of resins, synthetic rubber, synthetic fibers, and plastics were the basis for about 100 United States patents. While there, Dr. Kropa also served as an adjunct Professor of Chemical Engineering at New York University's College of Engineering. Dr. Kropa began his professional career under Careton Ellis, American inventor, both at the Ellis Laboratories and the Ellis-Foster Co., Montclair, N. J.

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Paul F. Gavaghan has been named supervisor of the General Electric Co.'s chemical division news bureau, Pittsfield, Mass., to replace **Robert L. Clark,** who will assume an employe relations assignment with the division. Mr. Gavaghan has been with the company's general news bureau at Schenectady, N. Y., seeing service as news editor on national defense and transport industries publicity. Prior to joining G-E in March, 1951, he had been with the Greensboro, N. C., *News Record.*

Samuel Tisser has joined Federal Latex Corp., 210-220 Wythe Ave., Brooklyn, N. Y., as general manager and assistant vice president in charge of technical sales and service. He will direct a staff of latex technologists and will serve the needs of consumers, with a complete range of latex compounds. Equipment and facilities are being expanded to meet increased demands. Mr. Tisser was formerly with Heveatex Corp., Melrose, Mass.

E. H. Eaton has been named operating manager of the trade sales department of The Firestone Tire & Rubber Co., Akron, O. Mr. Eaton, who has been in charge of retail store operations for the company since 1948, started in the Kansas City, Mo., district in 1926, served in various auditing and credit capacities in Kansas City and Wichita, Kan., for several years, and in 1934 became office manager of the Kansas City district. In 1943 he was transferred to Chicago to supervise division and stores accounting for the western division. The next year he joined the auditing department at the home offices in Akron and later that year became operating assistant for H. D. Tompkins. In his new position Mr. Eaton will retain his duties as head of retail store operations and will also be in charge of home office, dealer, and other operating functions of the trade sales department.

Robert O. Baughman, formerly of Heveatex Corp., has joined Automotive Rubber Co. and will be in charge of its newly enlarged rubber product development department at Detroit, Mich. In addition to his functions as the ARco chemical laboratory head, Baughman will assume top responsibilities for latex product development and sales. Beginning his chemical product development career with Goodyear in Akron, Baughman is credited with the development of many compounds and procedures in the uses and handling of natural and synthetic latices.

H. Arthur Howe, since December, 1951, manager of General Electric Co.'s laminated plastics plant at Coshocton, O., has been promoted to manufacturing manager of the company's laminated and insulating products department and will continue to maintain offices at Coshocton and to manage the plant there. In addition he will coordinate the department's overall manufacturing activities. Mr. Howe has had broad manufacturing experience since he came with G-E as a plastics compound test man at Pittsfield, Mass., in 1934. Three years later he was named foreman of the compound section and in 1943, operating engineer for the resin and varnish plant at Pittsfield. In 1947 and 1948 he served successively as superintendent and manufacturing manager for the former compound division. Prior to his transfer to Coshocton in 1951, Mr. Howe managed the phenolics products plant at Pittsfield.

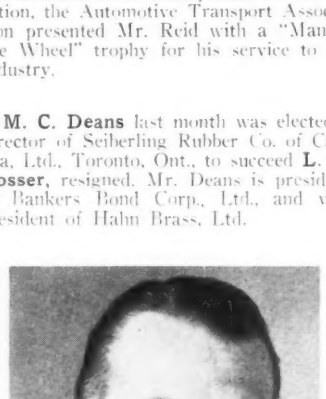
Carl O. Lind has retired from his position in the New York sales office of The Dow Chemical Co. He came to the company in 1924 when there were only six employes in the New York office. Throughout his 29 years with the company, he has been connected with general chemical sales and technical contacts in this field, covering New England, New York State, and portions of eastern Pennsylvania. Members of the New York sales office recently honored Mr. Lind with a dinner and presented him with an inscribed gold watch. Mr. and Mrs. Lind will reside in Florida on Lake Monroe at DeBary.

Arthur Surkamp, chairman of the finance committee and a vice president, United States Rubber Co., has been re-elected a trustee of Controllership Foundation, Inc., research arm of Controllers Institute of America, New York, N. Y. Mr. Surkamp has been active in the latter organization since 1942 and has served as a Foundation trustee since 1949.

Eugene H. Worcester, supervisor of labor relations and industrial relations assistant at the Mishawaka, Ind., plant of United States Rubber Co., has been appointed labor relations assistant in the company's New York headquarters. He has been with the company since 1942.

Vincent P. Reid, executive vice president of General Tire & Rubber Co. of Canada, Ltd., was honored recently at the Royal York Hotel, Toronto, Ont., on the completion of his twenty-fifth year with the company. More than 250 civic, professional, and business leaders, and officials of his firm, including chairman of the board and president of the parent company, William O'Neil, attended the affair and complimented Mr. Reid on his success in business and civic accomplishments. In addition, the Automotive Transport Association presented Mr. Reid with a "Man at the Wheel" trophy for his service to the industry.

M. C. Deans last month was elected a director of Seiberling Rubber Co. of Canada, Ltd., Toronto, Ont., to succeed **L. T. Rosser,** resigned. Mr. Deans is president of Bankers Bond Corp., Ltd., and vice president of Hahn Brass, Ltd.



R. D. Gerrie

Garry J. Monahan, Jr., has been promoted to sales representative for H. O. Canfield Co., manufacturer of mechanical rubber goods, Bridgeport, Conn. Mr. Monahan will work in the New England area. Starting with the organization in 1950 as an expediter in the cutting department, he was advanced to the quotation section in 1951. During World War II, he served with the Army Airforce for 3½ years.

R. O. Bair has been appointed pilot-plant superintendent of Rubarite, Inc., Magnet Cove, Ark., a recently formed company which produces a new synthetic rubber product for use in rubberized asphalt for paving and other allied purposes and which is jointly owned by Goodyear Tire & Rubber Co., The National Lead Co., and Bird & Son, Inc. Bair, who was in the Goodyear chemical engineering division, has taken a leave of absence to accept his new position. During his 12 years with the Goodyear organization he has been associated with the chemical engineering division as both a foreman and section head. For the past six months Bair has been at the Magnet Cove plant site as resident engineer during construction of the plant.

CANADA

Rubber Use and Stocks Down

Combined consumption of rubber—natural, synthetic, and reclaim—in Canada was 18% lower in July than in June; while month-end stocks declined a little. Production of synthetic and reclaim also dropped during July.

Consumption that month totaled 6,567 tons, against 7,977 a month earlier, with natural rubber at 2,710 tons; synthetic, 2,795; and reclaim, 1,062 tons. The respective figures for June were 3,216, 3,443, and 1,318 tons.

Month-end stocks amounted to 9,585 tons, against 9,777 on June 30, and comprised 4,685 tons of natural; 3,497, synthetic; and 1,403 tons, reclaim. June 30 stocks follow: natural, 3,892 tons; synthetic, 4,297; and reclaim, 1,588 tons.

Domestic output of synthetic rubber in July amounted to 4,930 tons, against 6,693 in June; while the tonnage for reclaim was 329 and 370, respectively.

Shaw Building in the Dominion

Francis Shaw & Co., Ltd., Corbett St., Ashton New Rd., Manchester 11, England, has formed a Canadian company registered as Francis Shaw (Canada), Ltd., at Graham's Lane, Burlington, Ont. R. D. Gerrie has been appointed general manager of the new enterprise.

This firm is erecting an engineering plant in Burlington, which initially will operate as a service depot for Shaw equipment in the Dominion and the United States and will eventually manufacture rubber and plastics mchinery for direct supply in those countries.

The parent concern, which has won a worldwide reputation, started in 1879 specializing in rubber and hydraulic machinery. It later branched into the plastics field. Shaw also maintains a London, England, office at 34 Victoria St., S. W. 1.

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Good news about Plasticizers!

Plastolein Plasticizers will soon be available in increased quantities at lower prices. Now's the time to investigate these important plasticizers in vinyls, cellulosics and synthetic rubbers:

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(di-2-ethylbutyl azelate)
Plastolein 9057 DIOZ
(di-iso-octyl azelate)
Plastolein 9058 DOZ
(di-2-ethylhexyl azelate)
Plastolein 9055 DGP
(diethylene glycol dipelargonate)
Plastolein 9250 THFO
(tetrahydrofurfuryl oleate)
Plastolein 9715 Polymeric
Plastolein 9720 Polymeric

In selecting the constituents that go into your products, you can't be too careful in getting the highest quality available, consistent with performance requirements and cost limitations.

When it comes to fatty acids, this careful selection always leads to Emery... because Emery Fatty Acids are safeguarded by modern processing methods and strict control of specifications, compositions and stability.

These advanced processing and control methods have been an outgrowth of Emery's pioneering in better and unique processes and products exemplified by the following innovations.

Emersol Solvent Crystallization Process
Lowest I.V. Crystalline Stearic Acid
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Ozone-Oxidation of Oleic Acids
Colgate-Emery Fat Splitting
High Pressure Dimerization
Low Linoleic Oleic Acid
Azelaic and Pelargonic Acids

So, when you need fatty acids, select the best... select from Emery's complete line of Emersol Stearic and Palmitic Acids, Hyfac Hydrogenated Fatty Acids, Emersol Oleic Acids, Vegetable and Animal Fatty Acids, and Special Fatty Acids and Derivatives.

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This outstanding phthalate mixed ester plasticizer (iso-octyl iso-decyl phthalate), combines the excellent all-around performance of the usual phthalate esters with the following extras:

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3. **Improved Heat Stability!**

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High Hardness Plastisols	**Natural and Synthetic Rubbers**
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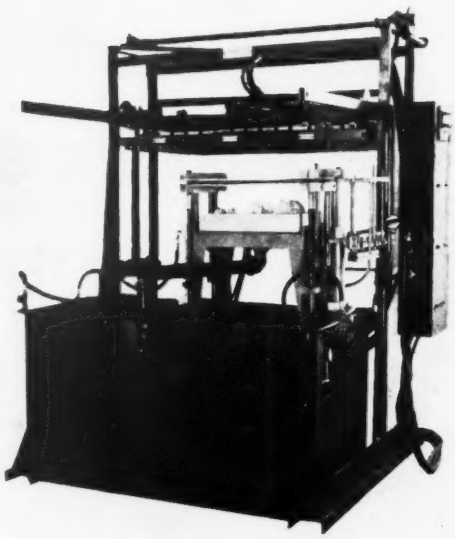
New Machinery



Model No. 50-20 Vacuum Forming Machine

Vacuum Forming Machine

A NEW vacuum forming machine that features completely automatic cycle operation, suitability for use with either male or female molds, and 90-degree adjustable platen for differential heating of the plastic sheet has been announced by Vacuum Forming Corp., Port Washington, N. Y. Designated Model No. 50-20, the new unit is said to be especially suitable for use with male molds that permit deep draws on relatively thin thermoplastic sheets.

After the plastic sheet has been placed in the mold frame, a push-button is used to start the automatic cycle which consists of the following steps: (1) the mold frame clamp closes by a pneumatic and hydraulic means to hold the sheet in place; (2) the electric heater assembly rolls out over the mold frame at an adjustable height; (3) the sheet is heated for a predetermined period of time at a preset temperature; (4) when the sheet has softened sufficiently, it is drawn over the mold, and a vacuum applied up through the mold frame assembly for a set period of time to suck the sheet up against the mold surfaces; and (5) when forming is complete, the heater assembly draws back, and the mold frame clamp opens to permit with-

Troubles?
SEE PAGE 4

DOW CORNING Release Agents give the finish that sells floor tile

It's appearance — not mileage — that sells floor tile!

The rich, deep colors and the delicate tints architects and decorators call for must come clean from the molds with a surface that looks polished and free from any bloom or blemish.

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. . . Simultaneously
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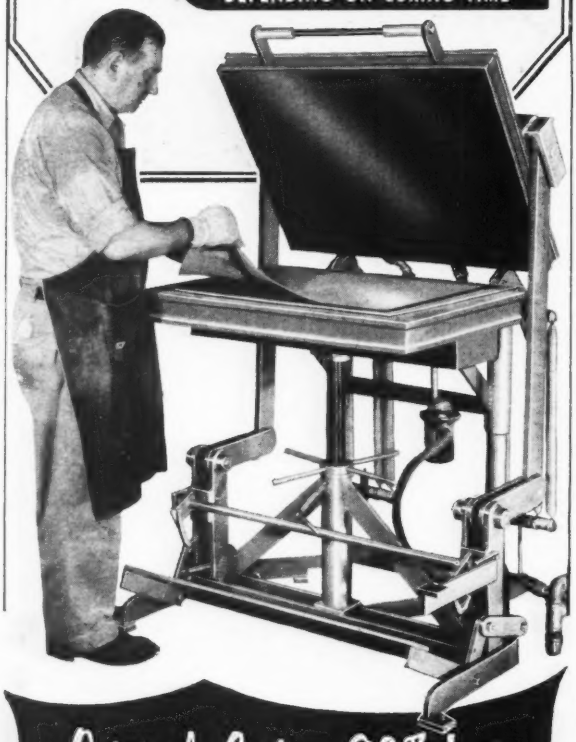

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ith The HOLMES SPONGE RUBBER VULCANIZING PRESS--there's no effort, no exertion, no operator fatigue. Mold remains set --no need to separately lift it each time. Locking and release is accomplished by simple foot action. Thus one man can operate from 1 to 17 at a time. Costs 1/5 of any other press that will do the same work.

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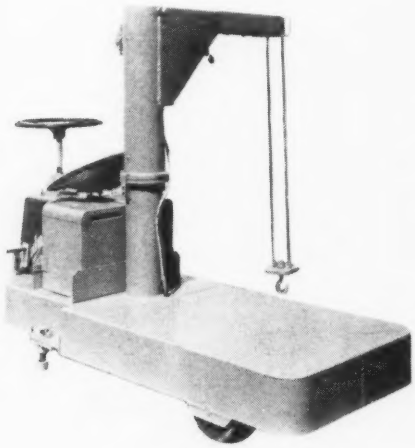
HOLMES

Successor to Holmes Brothers, Inc.

drawal of the finished part. The machine can also be operated manually when a job is being set up.

Other features of the machine include welded steel construction; 60- by 30-inch platen to handle sheets up to 52 by 24 inches in size; temperature range up to 1,150° F.; 100-gallon vacuum surge tank; and cycle control by means of four delay timers. The machine weighs about 2,500 pounds, and its overall dimensions are: height, 88 inches; width, 70 inches; and depth, 68 inches.



Market Forge Crane Truck

Revolving Crane Truck

MARKET FORGE CO., Everett, Mass., has announced the addition of a revolving crane truck to its line of material handling equipment. The truck is designed primarily for use in removing and replacing molds in tire molding machines, although other handling jobs, including storage and maintenance work, can also be accomplished with it.

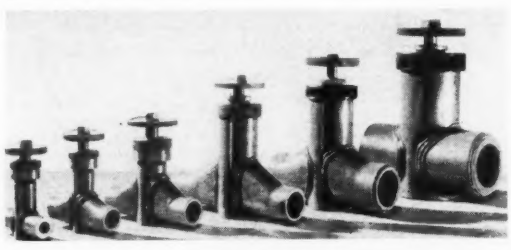
The crane functions by means of a hydraulic, double-acting ram on the inside of the main mast. The boom, which has a complete angular travel of more than 180 degrees, allows the hook to project as much as 24 inches over either side of the truck. Other specifications for the battery driven unit include: width, 36 inches; length, 92¼ inches; height, 68 inches; maximum load, 2,000 pounds; and load speed, 2½-3 mph.

PVC Needle and Globe Valves

UNPLASTICIZED polyvinyl chloride, designated Boltaron 6200, is being made into needle and globe valves for use with Boltaron pipe and fittings by H. N. Hartwell & Son, Inc., Poston, Mass. The new valves are made in nine standard I.P.S. sizes ranging from ⅛-2 inches and are reportedly resistant to organic and inorganic acids, alkalies, and alcohols.

This material is also being made into reducing bushings, plugs, unions, and caps for use in Boltaron pipe systems. The new fittings are manufactured in standard I.P.S. sizes of the same dimensions as given above for the valves.

Boltaron 6200, a Bolta-Hartwell product, is also available in 30- by 60-inch sheets $\frac{1}{32}$-1 inch thick and in 10-foot rods ¼-2 inches thick. The material is nontoxic and may be drawn, formed, molded, machined, and welded by the hot-air method.



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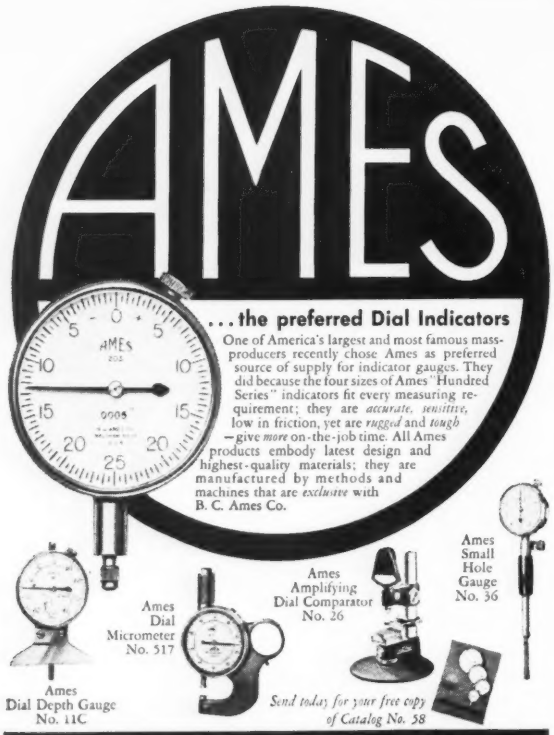
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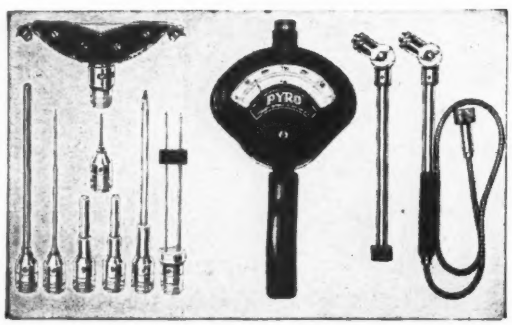

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New Materials

Vinyl Dry Blend Compounds

A NEW line of vinyl compounds designed for easy dry blending prior to injection molding has been announced by Monsanto Chemical Co., Springfield, Mass. Compounded with the firm's Opalon 300 vinyl resin, the blends also contain plasticizer, filler, stabilizer, and lubricant. The new compounds are dry, free-flowing, dustless powders supplied in natural (ivory), black, or white, and they can be drum tumbled with dry pigments to produce an unlimited range of colors. Advantages claimed for the blends include ease in molding, heat stability, short molding cycles, and the economies of dry coloring.

The new compounds are available in eight grades, as follows: Opalon 78207, the softest and most flexible grade, a high-gloss compound suggested for such applications as bumpers, grommets, doll heads, figurines, etc.; Opalon 78197, a high-gloss, moderately soft stock for use in the automotive field; Opalon 78096, a semi-gloss, general-purpose material with very good low-temperature properties; Opalon 78210, a high-gloss, translucent material comparable in hardness to 78096; Opalon 1308, a low-cost, high-gloss compound for general-purpose applications that do not involve contact with lacquers or styrene; Opalon 78216, a general-purpose, semi-gloss stock similar to 1308, but suitable for most service applications; Opalon 778211, a high-gloss, 80-durometer, translucent material for use in exposed parts of household appliances; and Opalon 1406, a semi-gloss, 90-durometer stock designed for high-temperature service and containing permanent plasticizers to minimize migration.

Powdered Cellosize WPHS

A NEW powder form of Cellosize WPHS hydroxyethyl cellulose has been announced as commercially available from Carbide & Carbon Chemicals Co., division of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y. The white, water-soluble, free-flowing material is used as a thickener and stabilizer in resin emulsions; as an additive in urea-formaldehyde textile finishes and in rubber products; and as a pigment dispersant.

Two viscosity types of Cellosize WPHS are offered: one having a viscosity of approximately 7,000 centipoises (5% solution at 20° C.); the other, designated Low, having a viscosity of approximately 100 centipoises under the same conditions. Both types contain a minimum of 60% hydroxyethyl cellulose and have a maximum salt content (sodium phosphates) of 35%.

Styrene Copolymer Resins

A NEW series of synthetic resins designed for applications requiring high impact strength and high heat distortion temperatures has been announced by The Goodyear Tire & Rubber Co., Inc., Akron 16, O. The first two members of the series, Plio-Tuf G75C and G85C, are now available. These new materials are said to be high styrene copolymer resins, not blends of resin and rubber, that are produced in the form of free-flowing white powders.

Plio-Tuf G75C is a medium hard resin (Shore D hardness, 72-78) that is hard, tough, and non-discoloring. It exhibits high impact strength at temperatures as low as —20° F.; possesses a high heat distortion point (195° F.); shows no plasticity, color, or property changes on extended milling at high temperatures; has excellent electrical properties; and resists the deteriorating effects of acids, alkalies, and exposure. The resin, it is further claimed, is easy to compound and process and does not exhibit the "nerve" of conventional rubber-resin blends. Its physical properties are particularly useful for the production of sheets intended for post-forming operations, but the resin can also be molded, extruded, and fabricated by the use of conventional techniques.

Plio-Tuf G85C is similar to G75C in electrical, chemical, and heat distortion properties, but has a higher hardness and tensile strength and lower elongation. G85C functions primarily as a modifying resin for G75C, natural rubber, and synthetic rubbers (GR-S, neoprene, and nitrile types). In such blends the resin increases tensile strength and stiffness, while retaining a useful impact strength and high heat distortion point.

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Rubber Compounding Resin

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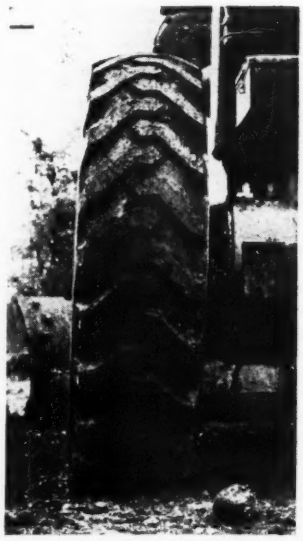
New Goods

Road Grader Traction Tire

NOW available from United States Rubber Co., Rockefeller Center, New York 20, N. Y., is the new U. S. Royal Road Grader-Full Traction tire made without a center running rib in order to give maximum traction on harder-type surfaces. The open center is claimed to allow the tire to bend and conform to any ground irregularity.

Another feature of the new tire is the lug angle which permits self-cleaning; the lugs themselves extend from each side to a point beyond the center. Also contained on the tire is a wide, flat tread, made of a special compound to resist cutting, snagging, and tearing; bonded cords which impart flexibility to the carcass; and a heavy, sidewall scuffing rib that adds to the wearing quality.



U. S. Royal Road Grader-Full Traction Tire

Highway Truck Tire

A new highway truck tire, the Gillette Super-Ribbed, has also been developed by this company. The product contains variable grooves and ribs that reportedly provide up to 40% more original ton-miles of wear, and a patented air cooled shoulder designed to dissipate excess heat. In addition, the tire is cured by an infrared process in an attempt to eliminate groove cracking, and it has extra-depth tread and two special shock pads to cushion against road shocks.

Nylon Passenger Tire

The Fisk Division of U. S. Rubber recently announced a new nylon passenger-car tire designed for sustained high-speed travel. This new Safti-Flight product is reported to have up to 95% more resistance to impact ruptures and bruises than ordinary tires.

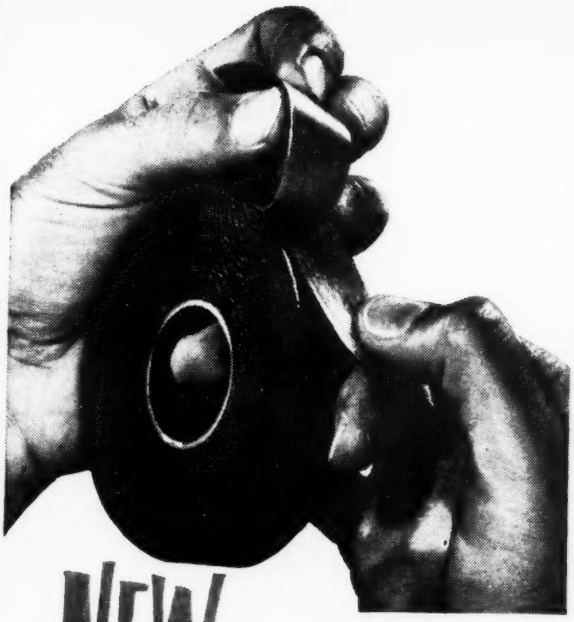
The nylon cords are said to be 25% thinner than typical rayon cords, and their use is claimed to result in a saving of two pounds in weight in a 7.60-15 tire. The new product retains all the premium features of Fisk's present Safti-Flight tires and will be priced about 6% higher.

Polyester Traffic Signs

PLASTIC traffic signs, constructed of glass reinforced Sy-loy, are being manufactured by The General Tire & Rubber Co., Akron, O., at its Marion, Ind., plant. Signs made of Sy-loy, the company's trade mark for polyester resin, have greater reflectability and are tougher, lighter and more flexible than conventional ones, it is claimed. In addition, these signs are said to withstand the effects of age and weather without painting or other maintenance. Nearly 80 different types of highway markers are made by General in 17 different sizes and shapes.

New Goodrich Hose

THE B. F. Goodrich Co., Akron, O., is offering a new heavy-duty air hose, called the Commander and said to be capable of withstanding working pressures up to 400 psi. The hose is reinforced with a single braid of high tensile steel wire and is said to be more flexible than other types of heavy-duty air hose. Designed for service in construction projects, mines, and quarries, where the unit must withstand high pressures and severe abra-



NEW PATAPAR
Releasing Parchments

Four new releasing types of Patapar Vegetable Parchment have characteristics which make them ideal as protective backing or wrapping materials for tacky substances. Their dense, fibre-free surfaces release easily from a wide variety of uncured natural or synthetic rubbers. They are used as separator sheets for uncured rubber, rubber tape, and as backing for pressure sensitive surfaces.

Important qualities

Although each of the four new releasing types of Patapar differ in properties and appearance, each type offers these advantages:

- **Low cost**
- **Excellent release from many tacky surfaces**
- **Dense, fibre-free surfaces**
- **Releasing qualities remain constant as time passes**
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We'll gladly send you complete information and samples of each of the four types of Patapar Releasing Parchments. Just write us.

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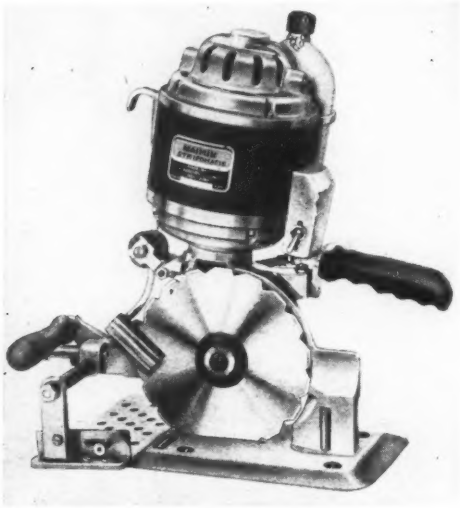

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CLAREMONT WASTE MFG. CO.

CLAREMONT N. H.

The Country's Leading Makers

sion, the hose is manufactured in sizes of ½-, ¾-, and one inch and features an oil-resistant tube which permits tools to be oiled through the hose, and a light-gray oil-resistant cover for increased hose visibility.

Hose for Liquid Ammonia

A new hose for handling anhydrous ammonia commercial fertilizer has been developed by Goodrich. Designed for a minimum burst pressure of 1,750 psi., the hose tube is made of a special rubber compound to resist the action of the chemical. The product is intended for use in transferring the liquid gas from storage plant to tank truck, to consumer's storage tank, and to the dispensing equipment.

Hose-Type Sprinkler

A newly developed spray hose in which are punched hundreds of tiny holes for the purpose of spraying water in all directions has also been announced by Goodrich. Made of Koroseal, the Multispray hose may be adjusted for heavy or gentle soaking by varying the water pressure and is reported to be ideal for watering around and under trees and shrubs. The product is available in 50-foot lengths.

Thermoplastic Adhesives

THREE types of Hot-Grip thermoplastic cements, designed for bonding together semi-rigid materials such as rubber, are currently being marketed by Hadley Bros.-Uh! Co., St. Louis, Mo. Melting at 120, 140, and 165° F., these colored but transparent compounds are recommended for use at 240, 275, and 310° F., respectively. The viscosity range given for these products at the working temperatures is 300-400 centipoises.

The types are differentiated by the degree of bond flexibility which they provide; the lowest melting of the series is recommended for use on lightweight materials requiring adhesion with extreme flexibility. When applied, the products are reported to set rapidly to a tough, permanent bond.

Plastic Hose Sprinkler

A FLEXIBLE green vinyl sprinkler containing eight water-spray openings around its circumference at 10-inch intervals is made by Goodyear Tire & Rubber Co., Akron, O., for watering gardens and lawns. The hose is equipped with a solid plastic reel which serves as both a storage unit and a positive action cut-off valve. This latter function of the reel involves simply folding the hose at some given point where the flow is to be stopped and inserting the fold in a special slot on the reel. Called Flexi-Spray, the open-end sprinkler is produced in lengths of 20, 35, and 50 feet; weight of a 50-foot section of hose plus reel is reported to be 1.3 pounds.

Tubeless Tire with Nylon Cord

THE Firestone Tire & Rubber Co., Akron, O., has developed a tubeless tire with nylon cord for high-speed continuous driving. Named the Firestone 500, the product is said to be the safest tire ever developed with nylon cord and is expected to be up to 90% stronger than a regular tire cord body.

Features claimed for this low-pressure tire, which will cost slightly more than the lowest priced Firestone rayon tubeless product, include longer tread wear, greater mileage, and more strength and less weight than contained in any other tubeless tire.

Stick-On Alphabet Designs

STICK-ON designs consisting of five basic letter shapes and individual letters are being used to teach preschool children alphabet and word construction. The designs, which adhere to glossy surfaces without the use of glue or gummy material, are contained in a spiral bound workbook produced by Colorforms, Englewood, N. J. Made of Krene vinyl film, product of Bakelite Co., division of Union Carbide & Carbon Corp., New York, N. Y., the stick-on sections can be easily removed from the glossy surface and reused many times without losing their adhesive properties.

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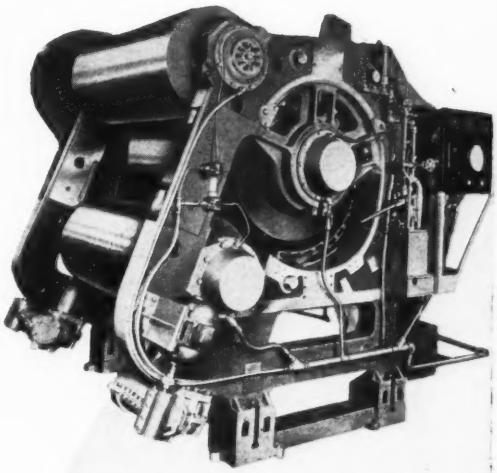

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EUROPE

GREAT BRITAIN

Rubber Lining for Reservoirs

Dunlop Rubber Co., Ltd., recently received a contract to manufacture a rubber lining for a reservoir holding 12,000,000 gallons of water. The reservoir is one of two belonging to the Sunderland & South Shields Water Co., situated about 10 miles from Sunderland. Each reservoir is 300 by 360 feet, and each is divided into two compartments by walls nine feet high. The reservoirs began to show serious cracks as a result of the working of underlying seams of coal. Filling of the cracks with asphalt or bituminous materials did not prevent the occurrence of renewed cracking on the slightest movement. After more than two years' experiments and tests, the water company accepted a plan worked out with its engineers by Dunlop for lining one of the two reservoirs with what in effect is a huge rubber bag. About 16,000 square yards of rubber sheeting mainly $\frac{1}{4}$-inch thick, and almost a ton of adhesive, will be needed to cover the sides of the reservoir; the total weight of the bag is given as 100 tons.

Plastics Exhibition and Convention

A successful exhibition, arranged by British Plastics, was held June 8-18 at Olympia, London, when some 80 exhibitors participated. Of special interest was the exhibit of the Ministry of Supply showing the striking effect of high energy radiation on plastics as obtained in tests at the Atomic Energy Research Establishment, at Harwell. Thus such treatment made polythene heat-resistant, but caused polytetrafluorethylene to disintegrate, and converted polyisobutylene to a semi-liquid state. It seems possible in this way to effect vulcanization of rubber.

In connection with the exhibition, a convention was held at which many papers were presented. The Earl of Halsbury, managing director of the National Research Development Corp., opened the convention with a lecture on "Reinforced Plastics—Public Invention and the Introduction of R.A.E. Techniques to Industry." Other papers included:

"Problems Related to the Manipulation of Unplasticized P.V.C." by J. J. P. Staudinger, British Resin Products, Ltd.

"Industrial Applications of Unplasticized P.V.C.," J. S. Byers, Imperial Chemical Industries, Ltd.

"Recent Commercial Developments in Melamine and Guanamine Resins," F. J. Mills, British Oxygen Co., Ltd.

"Molded and Extruded Polyamides and Polyesters," W. C. Fergusson, I.C.I.

"Silicones in the Plastics Industry," J. H. E. Jeffes, Midland Silicones, Ltd.

"Surface Chemistry and Adhesion of Glass and Plastics," H. Cole, Pilkington Bros., Ltd.

"Plastics Containing Asbestos as a Reinforcing Filler," P. H. H. Bishop, J. E. Gordon, P. L. McMullen, Royal Aircraft Establishment.

"A Critical Survey of Commercial Low-Pressure Laminating Resins," V. E. Yarsley and A. G. Goodchild.

"Some Considerations in the Design and Manufacture of Structures in Glass-Reinforced Plastics," G. C. Hulbert, Bristol Aeroplane Co., Ltd.

"Some Problems Associated with the Design and Manufacture of Asbestos-Reinforced Plastics," D. S. Bancroft, F. G. Miles, Ltd.

"Durability of Plastics under Post Office Conditions," A. D. W. Downes and A. A. New, Post Office Engineering Department.

"Durability of Adhesives for Wood," R. A. G. Knight, Forest Products Research Laboratory.

"A Study of the Problems Involved in High-Quality Injection Molding," E. Gaspar, Projectile & Engineering Co., Ltd.

"Economics of Large Molding Machines," D. Radford, E. K. Cole, Ltd.

"Plastics in the Telecommunication Cable Field," R. C. Mildner, H. F. Wilson, E. I. Cooke, Telegraph Construction & Maintenance Co., Ltd.

"Metallization of Plastics by Vacuum Evaporation for Functional and Scientific Purposes," L. Holland and N. Sutherland, W. Edwards & Co. (London), Ltd.

"Plastics in the Footwear Industry," W. E. Booth, British Boot, Shoe & Allied Trades Research Assn.

"Flameproof Conveyor Belting," S. J. Skinner, British Geon.

The full text of the above papers will be published under the title, "Plastics Progress 1953."

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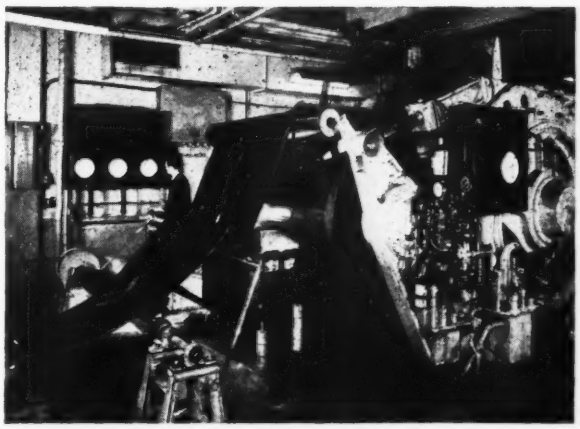

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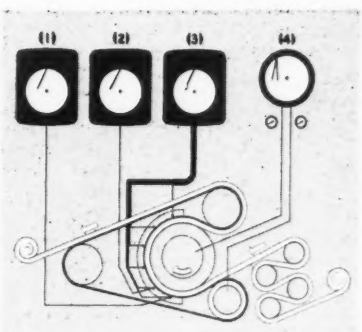

Instruments (1) and (2) are Foxboro Dynalog Input Controllers on Chromalox radiant heaters. (3) is a Multi-Record Dynalog Temperature Recorder which provides continuous records of the critical curing zones. (4) is a Foxboro Dual Controller which maintains constant temperature within the steam-heated rolls.

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Britain's Tubeless Tires

On May 21, Dunlop Rubber Co., Ltd., gave a demonstration at Fort Dunlop, Birmingham, of the first British tubeless tire. This tire has a rubber lining bonded to the inside of the carcass, and the pressure against the rim seat of the beads—covered with fairly thick and carefully molded rubber—insures perfect sealing against air escape. The usual valve passes through the hole in the standard rim and is held in place by rubber sealing washers. Inside the cover, beneath the tread, is a layer of puncture-sealing material whose composition is not revealed, but which a correspondent of the *Rubber Age and Synthetics* found looked and smelled bituminous and, when tested, burned with "a clear, candle-like flame."

The demonstration showed that even after the tire had been driven over two-inch nails and otherwise subjected to heavy abuse, it continued to give adequate service.

For the present, output of the tubeless tire is limited, and cost is about 20% higher than that of the ordinary tire and tube together; it is also about 10% heavier.

The report of the new tires, described in the press as Britain's first tubeless tires, called forth a number of challenging letters from correspondents in various parts of England who remembered the Fleuss tubeless bicycle tire made 50 to 60 years ago. According to one writer, the tire was invented and patented by Fleuss; a rival company whose name is not given, after an adverse court decision on its claim that the Fleuss tire infringed its patents, subsequently bought up the Fleuss patents and discontinued manufacture of this tire.

India Rubber Gutta Percha & Telegraph Works Co., Ltd., in the June 13 issue of *India Rubber Journal*, called attention to the "Silvertown" Closure Cycle Tire, introduced by the company in February, 1892. This was a tubeless self-sealing tire which quickly disappeared from the market because it was too heavy and was soon outmoded by the detachable tires patented by Welch and Bartlett.

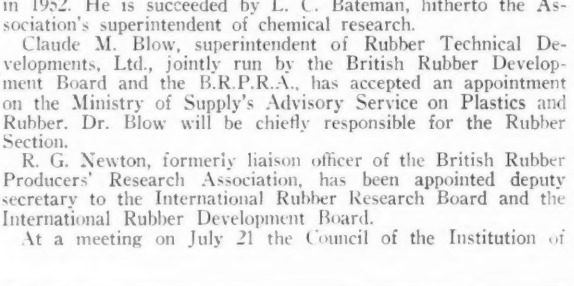
British Trade Notes

At the end of August, Geoffrey Gee resigned as director of research at the Welwyn Laboratories of the British Rubber Producers' Research Association to become professor of physical chemistry at Manchester University. Dr. Gee has been with the B.R.P.R.A. since its inception and received the Colwyn Medal in 1952. He is succeeded by L. C. Bateman, hitherto the Association's superintendent of chemical research.

Claude M. Blow, superintendent of Rubber Technical Developments, Ltd., jointly run by the British Rubber Development Board and the B.R.P.R.A., has accepted an appointment on the Ministry of Supply's Advisory Service on Plastics and Rubber. Dr. Blow will be chiefly responsible for the Rubber Section.

R. G. Newton, formerly liaison officer of the British Rubber Producers' Research Association, has been appointed deputy secretary to the International Rubber Research Board and the International Rubber Development Board.

At a meeting on July 21 the Council of the Institution of



Troubles?

SEE PAGE 4

the Rubber Industry approved the recommendation of the Manchester committee that the Ninth Foundation Lecture take place in Manchester on June 18, 1954.

The Dunlop Rubber Co., Ltd., has granted a Fellowship of £500 a year, for three years, at Birmingham University, for research work on biosynthesis, with special reference to rubber.

North British Rubber Co., Ltd., Edinburgh, and Dominion Rubber Co., Ltd., London, are merging their selling and branch service organizations to give more efficient service on the home market and to stimulate development of overseas markets. North British will distribute in the United Kingdom tires, footwear, and general mechanical goods formerly handled by the separate sales divisions of the two companies; while Dominion will handle overseas business. The products of both companies will be manufactured at the Edinburgh and Dumfries factories, which have undergone thorough modernization in the last few years. North British has a technical service agreement with United States Rubber Co., New York, N. Y., which places at its disposal all the latest methods of the American company.

Orders totaling $3,000,000 have been placed with Goodyear Tire & Rubber Co., Wolverhampton, for tires, wheels, brakes, and spare parts, for American aircraft operating in Europe.

Vulcan 6, a carbon black within the range of SAF Blacks, is now being successfully produced by Cabot Carbon Ltd., London, at its Stanlow plant. Other grades of furnace blacks produced at Stanlow are Vulcan 3 (HAF) and Sterling SO (FEF).

London Asiatic Rubber & Produce Co., Ltd., has increased its registered capital of £1,250,000 by £250,000 in 2s. shares.

In view of the declining interest in the section shown by exhibitors and buyers at recent fairs, the Association of British Chemical Manufacturers has decided not to organize a chemical section at the British Industries Fair to be held next year.

FAR EAST

MALAYA

U. S. Policy on Synthetic Rubber Criticized

The decision of the United States Government not to hand over the synthetic rubber plants to private industry before March, 1955, has not been too well received here. As the *Straits Times* (August 21) put it editorially:

"So for another twenty months natural rubber will continue to face the competition of a government-subsidized industry. It is no longer pretended that this competition is fair, while the completion of the strategic stockpile and the production of synthetic at a rate 300,000 tons in excess of the mandatory requirement deny any suggestion that national security is at stake."

The newspaper goes on to point out that though the official statement attached to the report on the legislation did mention shortages and hardships for the smaller consumers of rubber if the production of synthetic rubber fell, its chief emphasis was on "the undesirability of a better price for natural rubber," and to call attention to the provision by which those who buy the synthetic plants are also to be offered all stock of synthetic and of component materials, on terms in accordance with the RFC's pricing policy.

"In other words," the editorial concludes, "when private industry takes over, it will be given a subsidized start. It is something to be thankful for that legislation for disposal of the plants has been approved, but the spirit behind this legislation obviously was not altogether in sympathy with the Copenhagen pledge given to natural rubber producers by the representatives of American manufacturers."

The statement made on August 24 by Sir Sydney Palmer, former chairman of the British Rubber Development Board and of the Rubber Growers' Association, when he was in Washington seeking to obtain an increase in the price of synthetic rubber from 23 to 26¢ per pound, has been given wide publicity here.

Sir Sydney had declared that the problems facing natural rubber producers and vitally affecting American security could not wait for 20 months until the transfer of the synthetic plants was put into effect. The drastic break in the price of natural rubber, due to the availability of large supplies of synthetic at 23¢, was not only the cause of the inability of the Malayan Government to continue to fight Communism unaided, but also of the threatened failure of Malaya's social welfare and economic development plans, as important as the fighting war, in containing Communism. Smallholders and estate workers, he went on,

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discontented with the reduction in income brought about by the low rubber price, are easily swayed by Communist promises, presenting a problem of international security "which a more equitable price for natural rubber would help to alleviate."

What seem to have made the greatest impression here are the remarks he made when questioned by reporters on the possibility of Malaya selling rubber to the Communists. Sir Sydney had replied that Indonesians might be forced to sell to the Reds and that Malaya, though the last to sell to the Communists, might have to do likewise, if the slump continued and the large native population of Malaya brought pressure on the government.

Local rubber traders were quick to take their cue from Sir Sydney and on August 27 reportedly sent an appeal to the United States requesting a price at which they "could survive" and echoed the warning that unless Malayan producers were given a "reasonable chance," they would have to sell to the Communists.

The president of the Selangor Pahang Rubber Trade Association, Tee Teh, held that Americans should heed Sir Sydney's warning, since he was someone who knew the real situation better than most; Americans had talked long enough about their good intentions toward Malaya, he went on, and now was the time to do something concrete; and he added the obvious solution —an increase in the price of synthetic; and the obvious alternative—selling rubber to Communist countries.

The *Malay Mail* also approved Sir Sydney's remarks and comments:

"It is an odd situation that the United States should pour out its resources in Korea, Japan, Indo-China, and elsewhere to combat the menace of Communism, but should not be aware of the fact that economic conditions as prevail now in Malaya can, if not checked, aid the Communist cause."

Lost T.C. Rubber

Reports are being circulated in the local press that shipments of Technically Classified rubber are getting "lost" in American warehouses and are mixed with ordinary rubber. The word "lost" in quotation marks apparently is intended to suggest that there is something odd about this happening to a type of rubber held to be "natural rubber's answer to the boasts of synthetic that their product never varies while natural rubber often does" (*sic*). The story in this connection is that a manufacturer recently required 20 tons of T.C. rubber and was unable to procure any although it "was known that there was plenty in the country." Then "a long search revealed a pile of T.C. rubber in a New York godown, lying among ordinary rubber and apparently forgotten." The press item from which we quote goes on to report that a "rubber chief in Kuala Lumpur" stated that brokers did not seem to be making any particular effort to push T.C. rubber, and that it was no use T.C. rubber being developed in Malaya unless something was done about promoting sales.

Amalgamation of Estate Agencies

The Rubber Estate Agency of London (Malaya), Ltd., has acquired the share capital of Cumberbatch & Co., Ltd., thereby merging the interests of two well-known agency firms in Malaya. The former concern is a postwar development, having been formed to take over the SIPEF (Societe Internationale de Plantations et de Finance), with which it is still associated in conjunction with the Rubber Estates Agency, Ltd., of London. The latter and SIPEF have had interests in Malaya for about 50 years. Cumberbatch & Co. was established in Malaya more than 50 years ago when the parent company in Colombo, Ceylon, opened an office in Kuala Lumpur.

It is understood that the two parties to the merger will continue, for the present at any rate, to operate as separate companies, but will cooperate in matters of mutual interest.

RGA Representative for Malaya

The Rubber Growers' Association has decided to appoint a special representative in Malaya so as to enable it to play its part more effectively in all matters concerning the interests of the rubber producing industry. The Association also hopes in this way to be able to work even more closely with the local Rubber Producers' Council. The first representative is to be S. N. King, at one time Resident Commissioner of Penang. Mr. King, who was also a member of the executive and legislative councils, was for many years closely concerned with problems of the rubber industry.

Editor's Book Table

BOOK REVIEWS

"The Neoprenes. Principles of Compounding and Processing." Neil L. Catton. E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. Cloth, 6 by 9 inches, 260 pages. Illustrations, appendices, subject index.

As the author explains in his foreword, much investigative work has been done in the two decades since neoprene became commercially available which has appeared in scientific and trade publications and in du Pont technical literature. "The Neoprenes" has been compiled to assemble the results of this work in one volume as a reference book for the technologist and a textbook for the young men in the rubber industry. The book concerns itself with the fundamental principles of compounding and processing all types of dry neoprene and is amply documented and illustrated. The appendices contain useful information applicable to all types of elastomers.

The book is organized into five parts, the first four of which concern types of neoprene, general-purpose neoprenes, special-purpose neoprenes, and vulcanizate properties. Part V contains 16 sections and occupies about 55 pages.

The author has followed a fairly regular and convenient procedure with most of the neoprenes in first listing the physical and chemical properties, followed by basic compounding formulations, vulcanizations procedures, and then covering the effects of filler loading and plasticizer addition, etc. Compounding for special properties is then detailed and processing procedures are outlined.

Part IV, Vulcanizate Properties, is reported mostly by means of graphs and should be of particular value for easy ready reference. Part V, Appendices, includes additional details on storage stability of neoprene, Banbury mixing, calendering set-ups, blends of neoprene with other elastomers, etc.

Mr. Catton and the du Pont company have made a notable contribution to the literature of rubber technology.

"Statistical Methods for Chemical Experimentation." W. L. Gore. Interscience Publishers, Inc., 250 Fifth Ave., New York 1, N. Y. Cloth, 5 by 7¼ inches, 220 pages. Price, $3.50.

While many books have been published on the application of statistical methods to industrial quality control, little has appeared on the application of these methods to research and engineering development. In such work the primary contribution of statistical methods to chemical experimentation is in methods of designing experiments. This monograph is intended to give an appreciation of the problems involved in designing experiments and to outline some of the ways in which statistical designs can help, based on the author's work at the du Pont Experimental Station.

The text consists of an introductory chapter and sections on statistical concepts, reliability of estimates, analysis of variance, design of experiments, correlation and regression, and attribute statistics. Appendices include tables of data, an index to formulae used in the text, a glossary of terms, an annotated bibliography, and a subject index.

NEW PUBLICATIONS

"Thiokol Synthetic Rubbers." Thiokol Chemical Corp., 780 N. Clinton Ave., Trenton 7, N. J. 4 pages. Typical properties, uses, and compounding of the company's synthetic rubbers are contained in this publication.

"The Z Calender Originated by Farrel-Birmingham, The Most Significant Advance in Calender Design." Bulletin No. 197. Farrel-Birmingham Co., Inc., Ansonia, Conn. 4 pages. A description and the design features of the "Z" calender are contained in this folder.

"Services." Foster D. Snell, Inc., 29 W. 15th St., New York 11, N. Y. 22 pages. The applied research, development, and testing services offered by the company are described and illustrated in this spiral-bound booklet.

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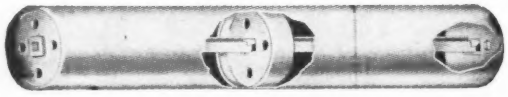

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"Sterling V and Sterling SO in Natural Rubber Tire Body Stocks." T. D. Bolt. Technical Service Laboratory Bulletin No. GD-4. Godfrey L. Cabot, Inc., 77 Franklin St., Boston, Mass. 9 pages. Six carbon blacks have been evaluated over a range of loadings in a simplified natural rubber formulation, and the laboratory results are presented here in both tabular and graphical forms.

"Fifteenth Annual Report." May, 1953. British Rubber Producers' Research Association, 19 Fenchurch St., London, E. C. 3, England. 48 pages. In addition to the financial statement of the Association, this booklet contains a summary of each of the main problems and achievements of 1952 as well as a short description of the researches being conducted in chemistry, physics, and technology by BRPRA.

"Company Practices in Marketing Research." R. D. Crisp. Research Report No. 22. American Management Association, New York, N. Y. Paper, $2.50. 60 pages. A study of 168 AMA member companies regarding their practices in marketing research is recorded in survey form in this booklet. Included in the study are data on expenditures, specific activities, and suggested improvements in present methods.

"1953-54 Reference Guide to Dow Corning Silicone Products." Dow Corning Corp., Midland, Mich. 4 pages. This publication is a comprehensive guide to the complete line of silicones, including 15 new products. The materials are cross-indexed according to applications and the individual products are described largely in terms of their operating and service characteristics.

"Rubber Publications of the National Bureau of Standards." L. A. Wood. LP 20, July, 1953. National Bureau of Standards, United States Department of Commerce, Washington 25, D. C. 44 pages. Superseding the previous bibliography compiled by the author (designated LC 869), this publication groups the articles on rubber according to subjects, such as natural, synthetic, latex, polymerization and purification, crystallization, and other transitions, constants and properties, chemical reactions, etc.

"Hycar Technical Newsletter." Vol. 2, No. 9. B. F. Goodrich Chemical Co., Rose Bldg., Cleveland 15, O. 6 pages. The direct solubility of Hycar 1042 in solvents commonly used for cements, the competitive advantages of Hycar GR-S blends, the compatibility of some ester-type plasticizers with Hycar rubber, and a discussion of some reinforcing pigments used in Hycar 4021 are subjects covered in this issue of the Newsletter.

"Amendment I to Type Descriptions and Packing Specifications for Natural Rubber, July 1, 1953." September 1, 1953. The Rubber Manufacturers Association, Inc., 444 Madison Ave., New York 22, N. Y. 8 pages. Contained in the amendment are clarifying changes in the packing specifications for Thick Pale Crepes, Thin Pale Crepes, and Estate Brown Thin Crepes; and substantial amendments to the sections on Talc Specifications and Bale Coating Solution. The purpose of the section amendments is (1) the inclusion of cheaper workable white powders; (2) the prohibition of use of any binder except natural rubber in the bale coating solution; and (3) the establishment of specific tests to determine conformance or non-conformance with the specifications.

"The Sunproofs: Inhibitors of Atmospheric Cracking." Compounding Research Report No. 24. Naugatuck Chemical Division of United States Rubber Co., Naugatuck, Conn. 8 pages. The effect of the Sunproof waxes in inhibiting the natural weathering of rubber products is discussed along with the chemical, physical and compounding properties of the five types of the product.

Publications of Minnesota Mining & Mfg. Co., St. Paul, Minn.

"New Potting Compound." 4 pages. This pamphlet gives general information and a description of the mixing and application procedures to be employed with EC-1120-PC, a two-part synthetic rubber sealer material.

"3M Dielectric Sealer EC-1120-PC." Engineering Bulletin, July 17, 1953 (Rev.). 9 pages. This publication contains a detailed description of the product, including its electrical and other properties.

BIBLIOGRAPHY

Rubber Roads Stretch Highway Dollars. W. G. Dulmage, *Can. Chem. Processing*, Feb., 1952, p. 42.

Relation between Stress Relaxation and Aging Resistance of Rubber Vulcanizates. H. L. Pedersen, B. Nielsen, *Rubber Chem. Tech.*, Jan.-Mar., 1952, p. 40.

Dilatometric Measurement of the Rate of Vulcanization of Crepe Rubber by Sulfur Monochloride. J. Glazer, *Rubber Chem. Tech.*, Jan.-Mar., 1952, p. 48.

Effect of Temperature and Rate of Stretching on the Tensile Strength of Vulcanizates. B. A. Dogadkin, D. M. Sandomirskii, *Rubber Chem. Tech.*, Jan.-Mar., 1952, p. 50.

Effect of Storage of Milled Rubber on Its Molecular Weight. F. H. Cotton, K. O. Lee, *Rubber Chem. Tech.*, Jan.-Mar., 1952, p. 71.

Action of Unsaturated Compounds on Natural Rubber in Solution. I. A. Delalande, *Rubber Chem. Tech.*, Jan.-Mar., 1952, p. 74. **II.** *Ibid.*, Apr.-June, 1952, p. 275.

Application of Drop Analysis to the Detection of Compounding Ingredients in Rubber Mixtures. II. L. M. Kulberg, G. A. Bloch, E. A. Golybkova, *Rubber Chem. Tech.*, Jan.-Mar., 1952, p. 152.

Determination of Free Sulfur in Vulcanizates by a Polarographic Method. F. C. J. Poulton, L. Tarrant, *Rubber Chem. Tech.*, Jan.-Mar., 1952, p. 161.

Study of the Mechanism of Surface Deterioration of Ebonite and of Means of Preventing Deterioration. R. W. Whorlow, *Rubber Chem. Tech.*, Jan.-Mar., 1952, p. 176.

Creep Test Methods for Determining Cracking Sensitivity of Polyethylene Polymers. W. C. Ellis, J. D. Cummings, *ASTM Bulletin*, Dec., 1951, p. 47.

Evaluation of Strippable Protective Coatings for Acrylic Plastics. H. G. Pfleiderer, R. A. Machlowitz, *ASTM Bulletin*, Dec., 1951, p. 59.

A Rubber Technologist's Bookshelf. G. L. Hammond, *India Rubber J.*, Dec. 1, 1951, p. 12.

The Role of Rubber Research. W. J. S. Naunton, *India Rubber J.*, Dec. 1, 1951, p. 19.

Textiles in the Rubber Industry. J. W. Illingworth, *India Rubber J.*, Dec. 1, 1951, p. 31.

Research and Advisory Services for Rubber Producers in Malaya. C. E. T. Mann, *India Rubber J.*, Dec. 1, 1951, p. 38.

Fifty Years in Rubber. Some Memories of Technical Developments. F. Jones, *India Rubber J.*, Dec. 1, 1951, p. 45.

Some Factors Affecting the Results of Mooney Viscosity Determinations. P. Braber, *India Rubber J.*, May 3, 1952, p. 7.

Kinetics and Mechanism of Accelerated Sulfur Vulcanization. M. Gordon, *Rubber Chem. Tech.*, Jan.-Mar., 1952, p. 1.

Determination of Absolute Rate Constants for Olefinic Oxidations by Measurement of Photochemical Pre- and After-Effects. I. L. Battman, G. Gee, *Rubber Chem. Tech.*, Jan.-Mar., 1952, p. 15.

Nature of Structural Changes of Butadiene Rubbers Caused by High Temperatures (100-200° C.). A. S. Kuzminskii, I. A. Shokhin, R. M. Belitzkaya, *Rubber Chem. Tech.*, Jan.-Mar., 1952, p. 33.

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MARKET REVIEWS

RUBBER

TRADING in both physical and futures rubber was quiet throughout the period from August 16 to September 15. Offerings of physical rubber from the Far East varied from light to moderate, but buying interest was on the dull side. In general, the rubber market appeared to be awaiting further developments in the synthetic rubber plant disposal program, and natural rubber interests were exerting further pressure on the government to raise the price of GR-S. The dullness of the market was illustrated by the fact that both the Firestone strike and the RFC cut-back in GR-S production were taken in stride, and prices were unaffected.

Dealers state that the world supply picture for natural rubber has brightened during the year. The total surplus during the first six months was only 35,000 tons, most of which were absorbed by the United States stockpile. Even if Far Eastern output rises during the balance of the year, the total surplus, apart from normal stocks, is not expected to exceed 100,000 tons. Original estimates made last year envisioned a surplus of about 200,000 tons at the end of 1953.

On August 24 the RFC issued a new price list for GR-S rubbers and latices, and GR-I rubbers. This list consolidated prices given in previous announcements which were published in our March (page 850) and July (page 548) issues.

NEW YORK SPOT MARKET
WEEK-END CLOSING PRICES

	June 27	July 25	Aug. 22	Aug. 29	Sept. 5	Sept. 12
R.S.S.: #1	24.63	23.63	23.63	23.50	23.50	23.50
2	23.75	22.88	23.25	23.13	23.00	23.00
3	22.75	22.13	22.38	22.13	22.00	22.00
Latex Crepe:						
#1 Thick	27.25	26.00	27.88	28.99	28.13	28.13
Thin	27.00	25.38	25.50	25.38	25.50	25.50
#3 Amber Blankets	21.50	21.63	20.38	20.25	20.13	20.13
Thin Brown Crepe:	20.75	19.63	19.50	19.38	19.38	19.38
Flat Bark	19.50	18.13	17.88	17.88	17.88	17.88

The spot price for #1 Ribbed Smoked Sheets started the period at 23.50¢, rose to a high of 24.00¢ on August 18, fluctuated near the low of 22.88¢ during most of the period, and closed at 23.50¢ on September 15. The August monthly average spot prices for certain grades follow: #1 R.S.S., 23.53¢; #3 R.S.S., 22.22¢; #3 Amber Blankets, 20.44¢; and Flat Bark, 17.85¢.

WEEK-END CLOSING PRICES

Futures	June 27	July 25	Aug. 22	Aug. 29	Sept. 5	Sept. 12
Dec.	23.50	22.94	23.20	22.95	23.25	23.10
Mar.	23.45	22.75	23.25	22.90	23.25	23.00
May	23.30	22.65	23.25	22.90	23.25	22.95
July	23.20	22.55	23.10	22.90	23.25	22.90
Sept.		22.45	23.10	22.90	23.25	22.80
Total weekly sales, tons	2,510	720	1,620	960	820	2,570

Activity in rubber futures on the Commodity Exchange was irregular, and the light volume of sales consisted mainly of switching operations to the distant months. December futures started the period at 23.10¢, reached a high of 23.64¢ on August 20, fell to a low of 22.85¢ on September 1, and closed at 23.25¢ on September 15. Sales of rubber futures during the second half of August amounted to 2,870 tons, making a total for the month of 4,340 tons. Sales during the first half of September reached 3,360 tons.

Latex

CONDITIONS in the latex market during the period from August 16 to September 15 showed no significant changes from those of the preceding month. Demand continued at good levels despite the seasonal slowdown, and supplies of *Hevea* latex are expected to be ample through the balance of the year. Domestic consumption of *Hevea* latex is expected to be in the order of 5,500 tons a month during the remainder of the year. An over-supply of latex is not anticipated in the next few months barring any unforeseen and substantial reduction in consumption. Spot prices for bulk *Hevea* latex range from 32-36¢ per pound solids, with discounts for "distress" lots and purchases made for future delivery.

Final June and preliminary July domestic statistics on natural and synthetic rubber latices are given in the following table:

(All Figures in Long Tons, Dry Weight)

	Production	Imports	Consumption	Month-End Stocks
Natural latex				
June	0	6,403	5,654	8,094
July*	0	6,000	5,083	9,264
GR-S latices				
June	4,080	251	3,950	5,744
July*	3,799	198	3,812	6,021
Neoprene latex				
June	739	0	704	1,069
July*	571	0	526	1,161
Nitrile latices				
June	425	0	358	593
July*	466	0	345	506

*Preliminary.

SCRAP RUBBER

THE scrap rubber market continued dull throughout the period from August 16 to September 15. Dealers indicated that there was practically no market for tires in the East, and the situation in the Midwest was only slightly better. At the end of the period reclaimers still had not placed orders for September delivery, and it was believed that these orders, when placed, would not amount to much. The tube market was reported to be very dull, with no early improvement in demand in sight.

Prices for mixed auto tires eased off $1 per net ton both in the East and at Akron. Other prices were unchanged during the period. Following are dealers' selling prices for scrap rubber, in carload lots, delivered to mills at the points indicated:

	Eastern Points	Akron, O.
	(Per Net Ton)	
Mixed auto tires	$11.00	$12.00
S. A. G. auto tires	Nom.	Nom.
Truck tires	Nom.	15.00
Peelings, No. 1	40.00	40.00/42.00
2	Nom.	24.00
3	16.00/18.00	18.00
	(¢ per Lb.)	
Auto tubes, mixed	2.00	2.50
Black	3.25	4.00
Red	9.75	10.25
Butyl	1.75	2.00

RECLAIMED RUBBER

ACTIVITY in the reclaimed rubber market during the period from August 16 to September 15 remained at approximately the same level as during the earlier summer months. While the number of plant shutdowns for vacations decreased, a slight decline in tire production and in other rubber products reduced demand for reclaim. The total dropping off in reclaim consumption was not considered alarming. The reclaim industry is keenly interested in the synthetic rubber plant disposal program and is awaiting the time when reclaim can compete with synthetic rubber produced in privately owned plants and priced in accordance with standard industrial cost accounting methods.

Final June and preliminary July figures on the domestic reclaimed rubber industry are now available. June statistics, in long tons, follow: production, 26,315; imports, 239; consumption, 24,637; exports, 962; and month-end stocks, 32,791. Preliminary figures for July, in long tons, are: production, 22,879; imports, 271; consumption, 23,358; exports, 963; and month-end stocks, 31,531.

Reclaimed Rubber Prices

	Lb.
Whole tire: first line	$0.10
Fourth line	.0875
Inner tube: black	.15
Red	.2425
Butyl	.125
Pure gum, light colored	.2425
Mechanical, light colored	.135

The above list includes those items or classes only that determine the price basis of all derivative reclaim grades. Every manufacturer produces a variety of special reclaims in each general group separately featuring characteristic properties of quality, workability, and gravity at special prices.

COTTON AND FABRICS

NEW YORK COTTON EXCHANGE
WEEK-END CLOSING PRICES

Futures	June 27	July 25	Aug. 22	Aug. 29	Sept. 5	Sept. 12
Dec.	33.98	34.10	33.62	33.65	33.59	33.57
Mar.	34.16	34.31	33.84	33.90	33.87	33.91
May	34.22	34.34	33.78	33.89	33.90	33.90
July	34.04	34.18	33.54	33.71	33.75	33.87
Oct.	33.24	33.42	33.37	33.45	33.50	33.57
Dec.	33.20	33.42	33.42	33.50	33.55	33.61

FEATURELESS trading and price fluctuations over a very narrow range characterized activity on the New York Cotton Exchange during the period from August 16 to September 15. Most market factors were bearish and included the large crop carry-over; prospects for a large new crop as the result of favorable weather throughout the Cotton Belt; the absence of any particular activity in the textile and export markets; and the prospect of increased hedging as the new crop movement expands. Selling of cotton was discouraged by the fact that prices hovered near the loan level. Indications are that, unless prices improve, large quantities of cotton will be placed under loan.

The spot price for $^{15}/_{16}$-inch middling cotton started the period at 33.65¢, reached a high of 33.85¢ on August 26 and again on September 2, and closed at 33.75¢ on September 15. December futures started the

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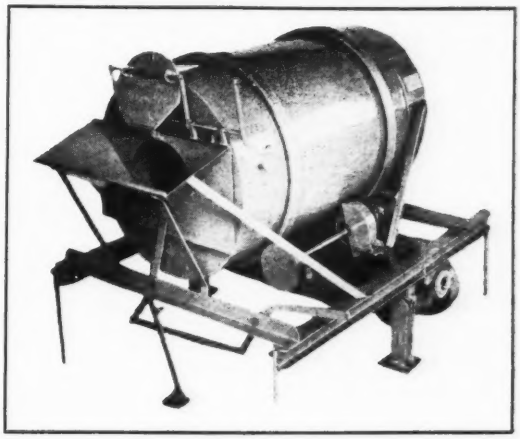

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period at 33.55¢, rose to a high of 33.80¢ on August 25, and ended the period at a low of 33.36¢.

Fabrics

Moderate trading in industrial gray goods was noted throughout the period. Small lots of ducks were sold for spot and nearby delivery, but most customers continued to purchase on a hand-to-mouth basis. In view of depleted customer inventories, a scramble for ducks may develop if anything should happen to stimulate trading.

Limited quantities of sateens, broken twills, and wide drills were sold for spot and October delivery, with lower quotations reported for certain constructions. Most mills enjoyed fairly active trading in headlinings for delivery through September and October, and there were some indications that supplies may become tight in October.

Cotton Fabrics

Drills

59-inch 1.85-yd.	yd.	$0.3775 / $0.38
2.25-yd.		.3375 / .34

Osnaburgs

40-inch 2.11-yd.	yd.	.2425
3.65-yd.		.16

Ducks

38-inch 1.78-yd. S. F.	yd.	.3875
2.00-yd. D. F.		nom.
51.5-inch, 1.35-yd. S. F.		.51¼
Hose and belting		.67

Raincoat Fabrics

Print cloth, 38½-inch, 64x60	yd.	.155 / .1625
Sheeting, 48-inch, 4.17-yd.		.22
52-inch, 3.85-yd.		.23½

Chafer Fabrics

14.30-oz./sq. yd. Pl.	lb.	.73
11.65-oz./sq. yd. S.		.65
10.80-oz./sq. yd. S.		.6875
8.9-oz./sq. yd. S.		.70

Other Fabrics

Headlining, 59-inch, 1.65-yd.,		
2-ply	yd.	.485 / .49
64-inch, 1.25-yd., 2-ply		.6175 / .6225
Sateens, 53-inch, 1.32-yd.		.5675
58-inch, 1.21-yd.		.62

RAYON

UNITED STATES producers' shipments of all types of rayon during August totaled 104,100,000 pounds, or 2% below the July figure. Output during August was 107,900,000 pounds, and stocks rose to 95,700,000 pounds the highest level since May, 1952. August totals for viscose high-tenacity rayon yarn were: production, 40,100,000 pounds, or 94% of rated capacity; total shipments, including exports, 38,100,000 pounds; and month-end stocks, 10,100,000 pounds. Total rayon shipments by domestic producers for the first eight months of the year amounted to 829,500,000 pounds, or 10% higher than shipments during the same period in 1952.

No changes were made in rayon tire yarn and fabric prices during the period from August 16 to September 15.

Rayon Prices

Tire Yarns

1100/480	$0.62 / $0.63
1100/490	.62
1150/490	.62
1165/480	.63
1650/720	.61
1650/980	.61
1820/980	.61
2200/960	.60
2200/980	.60
2200/1466	.67
4400/2934	.63

Tire Fabrics

1100/490/2		$0.72
1650/980/2	$0.659	.73
2200/980/2		.685

Compounding Ingredients—Price Changes and Additions

Accelerator-Activators, Inorganic

Litharge, Eagle	lb.	$0.155 / $0.156
National Lead	lb.	.155 / .156
Red lead, Eagle	lb.	.165
National Lead	lb.	.165 / .1675

Accelerator-Activators, Organic

Emersol 110	lb.	.105 / .13
120	lb.	.11 / .135
130	lb.	.1325 / .1575
210 Flaine	lb.	.11 / .145
Emery 600	lb.	.1025 / .1375
Hyfac 400	lb.	.09 / .115
430	lb.	.13 / .155
431	lb.	.1525 / .1775

Colors, White, Zinc Oxide

Azo ZZZ-11, -44, -55	lb.	.135 / .145
20% leaded	lb.	.1375 / .1475
35% leaded	lb.	.14 / .15
50% leaded	lb.	.14¼ / .15¼
Eagle AAA, lead-free	lb.	.135 / .145
5% leaded	lb.	.135 / .145
35% leaded	lb.	.14 / .15
50% leaded	lb.	.14¼ / .15¼
Florence Green Seal	lb.	.1525 / .1625
Red Seal	lb.	.1475 / .1575
White Seal	lb.	.1575 / .1675
Horsehead XX-4, -78	lb.	.135 / .145
Kadox-15, -17, -22	lb.	.135 / .145
-25	lb.	.1575 / .1675
Lehigh, 35% leaded	lb.	.14 / .15
50% leaded	lb.	.14¼ / .15¼
Protox-166, -167	lb.	.135 / .145
St. Joe, lead-free	lb.	.135 / .145

Latex Compounding Ingredients

Accelerator J-117, -302	lb.	1.00 / 1.15
-144	lb.	.15 / .30
-307	lb.	1.10 / 1.25
-311	lb.	.60 / .75
Antioxidant J-137, -140	lb.	.55 / .70
-139, -293	lb.	1.45 / 1.60
-182	lb.	2.00 / 2.15
-186	lb.	1.40 / 1.55
Anti-Webbing Agent J-183	lb.	.75 / .90
-207	lb.	.27 / .40
Resin Emulsion P-370	lb.	.175 / .25
X-210	lb.	.12 / .22
Stablex T	lb.	.14 / .22
Sulfur dispersions	lb.	.12 / .30
Zinc oxide dispersions	lb.	.21 / .34

Plasticizers and Softeners

Baker AA Oil	lb.	.225 / .27
Crystal O Oil	lb.	.225 / .285
Processed oils	lb.	.23 / .265
PT Pine Tars	gal.	.35 / .46
101 Pine Tar Oil	gal.	.335 / .445

Reclaiming Oils

PT 101 Pine Tar Oil	gal.	.335 / .445

Synthetic Resins

Plio-Tuf G75C, G85C	lb.	.52 / 58

FINANCIAL

Dayton Rubber Co., Dayton, O. Nine months to July 31, 1953: net earnings, $1,305,781, equal to $2.10 a common share, compared with $1,134,356, or $1.81 a share, in the 1952 period; net sales, $43,981,346, against $38,354,363.

Faultless Rubber Co., Ashland, O. Year to June 30, 1953: net earnings, $400,694, equal to $3 a common share, compared with $313,436, or $2.34 a share, in the preceding fiscal year.

Flintkote Co., New York, N. Y., and subsidiaries. Twenty-eight weeks ended July 18, 1953: net income, $2,485,764, equal to $1.83 a common share, compared with $2,009,375, or $1.45 a share, a year earlier.

General Motors Corp., Detroit, Mich. First half, 1953: consolidated net income, $312,845,787, equal to $3.51 a common share, against $269,048,085, or $3.01 a share, in the like period last year; net sales, $5,440,545,856, against $3,868,560,341.

The Glidden Co., Baltimore, Md. Nine months ended July 31, 1953: net profit $4,629,251, equal to $2.02 a share, compared with $4,139,619, or $1.81 a share, a year earlier; sales, $155,905,486, against $150,160,265.

Hewitt-Robins, Inc., Stamford, Conn. First six months, 1953: net income, $511,115, equal to $1.78 a share, against $466,317, or $1.63 a share, in the first half of 1952; net sales, $18,877,688, against $19,122,369.

Byron Jackson Co., Los Angeles, Calif. Six months ended June 30, 1953: net income, $700,965, equal to $1.32 a common share, against $703,972, or $1.33 a share, a year earlier.

Johnson & Johnson, New Brunswick, N. J., and domestic subsidiaries. June half, 1953: net profit, $4,899,000, equal to $2.32 a common share, compared with $3,963,000, or $1.85 a share, in the 1952 half; sales, $102,756,000, against $93,580,000.

United States Rubber Statistics—June, 1953

(All Figures in Long Tons, Dry Weight)

	New Supply			Distribution		
	Production	Imports	Total	Consumption	Exports	Month-End Stocks
Natural rubber, total	0	55,020	55,020	42,570	409	104,865
Latex, total	0	6,403	6,403	5,654	0	8,094
Rubber and latex, total	0	61,423	61,423	48,224	409	112,959
Synthetic rubbers, total	*71,839 †8,388	919	81,146	71,751	1,769	143,789
GR-S types‡	*64,919 †47	796	65,762	57,262	769	112,770
Butyl	*6,920	123	7,043	7,431	2	18,141
Neoprene‡	†6,800	0	6,800	5,677	741	9,073
Nitrile types‡	†1,541	0	1,541	1,381	257	3,805
Natural rubber and latex, and synthetic rubbers, total	80,227	62,342	142,569	119,975	2,178	256,748
Reclaimed rubber, total	26,315	239	26,554	24,637	962	32,791
GRAND TOTALS	106,542	62,581	169,123	144,612	3,140	289,539

*Government plant production.
†Private plant production.
‡Includes latices.
SOURCE: Chemical & Rubber Division, NPA, United States Department of Commerce, Washington, D. C.

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Protect the fine reputation of your products by using only the best raw materials when manufacturing.

For more than 30 years we have been a dependable source of supply of first-quality raw materials for leading rubber compounders and reclaimers. Among our products are:

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Pine Tars	**Pine Tar Oils**	**Pine Oil**
Burgundy Pitch	**Tackifiers**	**Dipentene**

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ATGLEN, PA.

Garlock Packing Co., Palmyra, N. Y. First half, 1953: net profit, $708,316, equal to $1.69 a share, against $630,780, or $1.50 a share, a year earlier.

Lee Rubber & Tire Corp., Conshohocken, Pa., and domestic subsidiary. Nine months ended July 31, 1953: net profit, $1,252,715, equal to $4.72 a share, against $1,296,033, or $4.88 a share, a year earlier.

Minnesota Mining & Mfg. Co., St. Paul, Minn., and domestic subsidiaries. First half, 1953: net income, $9,056,111, equal to $1.09 each on 8,140,596 common shares, against $7,486,720, or 91¢ each on 8,007,549 shares, in the 1952 half; net sales, $106,234,119, against $88,074,407.

Mt. Vernon-Woodberry Mills, Inc., New York, N. Y. First six months, 1953: net income, $987,000, equal to $1.53 a share, compared with $1,897,000, or $2.95 a share, in the like period last year; sales, $21,585,000, against $30,708,000.

National Lead Co., New York, N. Y. Six months ended June 30, 1953: net income, $13,807,715, equal to $1.16 a common share, against $11,074,640, or 98¢ a share, in the corresponding period last year.

Parke, Davis & Co., Detroit, Mich. First half, 1953: net profit, $4,312,981, equal to 88¢ a share, against $9,778,861, in the like period last year; net sales, $53,674,407, against $70,739,771.

Pittsburgh Plate Glass Co., Pittsburgh, Pa. First six months, 1953: net earnings, $20,767,178, equal to $2.30 a share, compared with $17,765,435, or $1.97 a share, a year earlier; net sales, $232,658,635, against $196,255,715.

Statement of India RUBBER WORLD

Statement of the ownership, management, and circulation required by the Act of Congress of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946, (Title 39, United States Code, Section 233) of India RUBBER WORLD, published monthly at Philadelphia, Pa., for October, 1953.

1. The names and addresses of the publisher, editor, managing editor, and business manager are: publisher, Bill Brothers Publishing Corp., 386 Fourth Ave., New York 16, N. Y.; editor, Robert G. Seaman, 386 Fourth Ave., New York 16, N. Y.; managing editor, S. R. Hague, 386 Fourth Ave., New York 16, N. Y.; business manager, B. Brittain Wilson, 386 Fourth Ave., New York 16, N. Y.

2. The owner is: Bill Brothers Publishing Corp., Raymond Bill, Edward Lyman Bill, all at 386 Fourth Ave., New York 16, N. Y.

3. The known bondholders, mortgagees, and other security holders owning or holding 1% or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

B. BRITTAIN WILSON
Business Manager

Sworn to and subscribed before me this 3rd day of September, 1953.

[SEAL] HELEN M. VERLIN
Notary Public in the State of New York. Qualified in New York County, No. 31-9460500.
(Commission expires March 30, 1954)

Phelps Dodge Corp., New York, N. Y. First six months, 1953: net profit, $18,878,591, equal to $1.86 a common share, against $17,551,944, or $1.73 a share, in the like period last year.

Raybestos-Manhattan, Inc., Passaic, N. J., and domestic subsidiaries. First half, 1953: net income, $1,751,884, equal to $2.79 a share, against $1,608,291, or $2.56 a share, in last year's period.

Rome Cable Corp., Rome, N. Y. June quarter, 1953: net earnings, $524,000, equal to $1.05 each on 498,531 common shares, against $562,925, or $1.15 each on 481,767 shares, in the corresponding period of 1952.

Seiberling Rubber Co., Akron, O. Six months ended June 30, 1953: net profit, $525,337, equal to $1.07 each on 391,200 common shares, compared with $437,137, or $1.08 each on 301,010 shares, in last year's half; net sales, $20,911,260, against $19,641,935.

Thermoid Co., Trenton, N. J. June half, 1953: net earnings, $782,147, equal to 90¢ a common share, compared with $502,824, or 55¢ a share, in the same period last year.

Thiokol Chemical Corp., Trenton, N. J. First half, 1953: net profit, $83,481, equal to 25¢ a common share, against $117,862, or 35¢ a share, a year earlier.

Union Asbestos & Rubber Co., Chicago, Ill. First half, 1953: net earnings, $375,000, equal to $1.22 a share, against $328,000, or $1.17 a share, a year earlier.

United Carbon Co., Charleston, W. Va., and subsidiaries. First six months, 1953: net earnings, $1,945,317, equal to $2.44 each on 795,770 capital shares, against $1,749,355, or $2.20 a share, in the 1952 months.

United Engineering & Foundry Co., Pittsburgh, Pa. Six months ended June 30, 1953: net profit, $2,043,709, equal to 82¢ a common share, against $1,933,587, or 77¢ a share, a year earlier.

OBITUARY

Littleton C. Barkley

LITTLETON C. BARKLEY, 51, since 1948 general sales manager, West Coast division of Raybestos-Manhattan, Inc., died August 27 at San Mateo, Calif.

Mr. Barkley had joined The Manhattan Rubber Mfg. Co., Passaic, N. J., now the Manhattan Rubber Division of Raybestos-Manhattan, Inc., in 1926. Two years later he was transferred to the New York office as a salesman and was made assistant branch manager in 1937. He later served as manager of the New York branch from 1940 until 1944, when he was appointed sales manager of the industrial rubber products division at Passaic.

Harry L. Ericson

CORONARY thrombosis caused the death, on August 4, of Harry L. Ericson at Amarillo, Tex., where he had served Continental Carbon Co. as chief chemist since 1951.

The deceased was born June 24, 1920, at Manchester, Mass., where he attended local grade and high schools. Then he went to Northeastern University, Boston, from which he was graduated in April, 1943, with a B.S. in chemical engineering.

Mr. Ericson gained his technical and sales experience with the following concerns: General Latex & Chemical Corp. (September, 1939-January, 1942); Cambridge Rubber Co. (January, 1942-July, 1943, and July, 1944-January, 1946); Dee's Adhesives & Chemical Co. (August, 1943-July, 1944); United States Rubber Co. (February, 1946-June, 1948). Then he joined Witco Chemical Co. and for the three years prior to his transfer to Continental had worked in the Witco carbon black division both in New York and Chicago.

Harry Ericson belonged to the American Society of Chemical Engineers and the Masonic Order.

Funeral services and burial took place in Manchester on August 8.

Survivors include his parents and his widow.

Dividends Declared

COMPANY	STOCK	RATE	PAYABLE	STOCK OF RECORD
Anaconda Wire & Cable Co.	Com	$0.75	Oct. 10	Oct. 6
Armstrong Cork Co.	$3.75 Pfd.	0.93¾ q.	Sept. 15	Sept. 1
	$4 Pfd.	1.00 q.	Sept. 15	Sept. 1
Circle Wire & Cable Corp.	Com.	0.40 q.	Sept. 24	Sept. 10
Crown Cork International Corp.	$1 Cl. A	0.25 q.	Oct. 1	Sept. 14
Dayton Rubber Co.	Com.	0.50 q.	Oct. 26	Oct. 9
	Cl. A	0.50 q.	Oct. 26	Oct. 9
Denman Tire & Rubber Co.	Com.	0.10 q.	Oct. 2	Sept. 22
Dewey & Almy Chemical Co.	Com.	0.15 q.	Sept. 21	Sept. 11
General Tire & Rubber Co.	4¼ Pfd.	1.06¼ q.	Sept. 30	Sept. 18
	3¾ Pfd.	0.93¾ q.	Sept. 30	Sept. 18
	3¼ Pfd.	0.81¼ q.	Sept. 30	Sept. 18
B. F. Goodrich Co.	Com.	0.65 q.	Sept. 30	Sept. 8
Goodyear Tire & Rubber Co. of Canada, Ltd.	Com.	1.00 q.	Sept. 30	Sept. 10
Hewitt-Robins, Inc.	Com.	0.50 q.	Sept. 15	Sept. 2
Johns-Manville Corp.	Com.	0.75 q.	Sept. 11	Sept. 1
Johnson & Johnson	Com.	0.35 q.	Sept. 11	Aug. 28
Mansfield Tire & Rubber Co.	Com.	0.40 q.	Sept. 18	Sept. 8
Mohawk Rubber Co.	Com.	0.25 q.	Sept. 30	Sept. 15
		0.25 extra	Sept. 30	Sept. 15
Monroe Auto Equipment Co.	Com.	0.62½ q.	Oct. 1	Sept. 18
Raybestos-Manhattan, Inc.	Com.	0.50 q.	Sept. 12	Aug. 28
Rome Cable Corp.	Com.	0.35 q.	Oct. 1	Sept. 10
Russell Mfg. Co.	Com.	0.25 q.	Sept. 15	Aug. 31
A. G. Spalding & Bros., Inc.	Com.	0.25 q.	Sept. 15	Sept. 8
Thermoid Co.	Com.	0.10 q.	Sept. 30	Sept. 10
	$2.50 Pfd.	0.62½ q.	Nov. 2	Oct. 15
U. S. Rubber Reclaiming Co.	$1.40 Pfd.	0.35 q. accum.	Oct. 1	Sept. 21
Westinghouse Air Brake Co.	Com.	0.40 q.	Sept. 15	Aug. 28

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TECHNICAL DIRECTOR
Port Clinton, Ohio, Division

Reports to Director of Engineering and Research. Must have heavy experience in rubber compounding, curing, adhesives, laminations, physical and chemical characteristics; design of rubber parts in connection with extrusions and molds. Operate and expand laboratory. Must have a Chemical Engineering or Chemistry Degree from a recognized school. Salary commensurate with ability and experience. Submit résumé in full to: Director of Engineering and Research, Standard Products Co., 2160 Halstead Ave., Cleveland 7, Ohio.

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For the right man, rubber chemist with experience in latex compounding. Research and quality control with a small well-established firm in southeastern Pennsylvania. Familiarity with vinyls an added asset. Address Box No. 1380, care of INDIA RUBBER WORLD.

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CHEMICAL ENGINEER, LONG EXPERIENCE RUBBER FOOTwear manufacture, all in-process operations from compound to finished product. Desires position production and research. Address Box No. 1381, care of INDIA RUBBER WORLD.

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STOKES ROTARY PELLET PRESSES (5), 16-PUNCH RD-3 AND 15-punch RDS-3 (one with slotted head); (2) Kux model 25 Presses 21 and 25 punch. Ball & Jewell #1½ stainless steel rotary cutter. Mikro Pulverizers #1-SH, #1-SI, #2-TH, #2-SI and 24". Large stock steel and stainless tanks and kettles. PERRY EQUIPMENT CORP., 1424 N. 6th St., Phila. 22, Pa.

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5 WATSON-STILLMAN ALL-STEEL 450-TON PRESSES, PLATEN size 20x40, 8 openings, 20" ram with 16" stroke, 3" openings between platens. 2500 psi. 5"-diameter strain rods. The presses measure 24½" between posts in both directions. 2 hydraulic accumulators with 150 cu. ft. pressure tanks. 1 Farrel cast-iron press, 40x40, with 20" piston, 16" stroke, 4½" strain rods, 45" between posts. All above equipment is in excellent working order, were in use until 6 weeks ago. Address Box No. 1377, care of INDIA RUBBER WORLD.

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STATE HIGHWAY No. 29, UNION, N.J.
UNIONVILLE-2-4900

United States Imports, Exports, and Reexports of Crude and Manufactured Rubber

Imports for Consumption of Crude and Manufactured Rubber

	May, 1953	
	Quantity	Value
UNMANUFACTURED, LBS.		
Crude rubber	113,012,189	$25,495,937
Latex	12,709,108	3,609,808
Balata	118,155	27,463
Jelutong or Pontianak	188,712	64,822
Gutta percha	11,200	3,388
Crude chicle	48,244	13,260
Synthetic rubber	2,368,840	624,917
Reclaimed rubber	679,719	31,772
Scrap rubber	2,234,239	91,433
TOTALS	131,370,406	$29,962,800
MANUFACTURED		
Rubber tires		
Auto, etc. *no.*	5,592	$264,141
Bicycle *no.*	6,148	5,001
Other *no.*	94	5,971
Inner tubes		
Auto, etc *no.*	1,119	8,706
Footwear		
Boots *prs.*	13,604	38,355
Shoes and overshoes *prs.*	89,903	45,342
Rubber-soled canvas-shoes *prs.*	29,636	32,273
Athletic balls		
Golf *no.*	75,236	16,172
Tennis *no.*	71,076	23,651
Other *no.*	114,429	14,802
Toys		33,421
Hard rubber goods		
Combs *no.*	20,616	2,063
Drug sundries		355
Other		27,870
Rubberized printing blankets *lbs.*	344	916
Rubber and cotton packing *lbs.*	4,034	7,105
Gaskets and valve packing		454
Molded insulators		160
Belting *lbs.*	4,640	6,454
Hose and tubing		10,697
Gloves *prs.*	59,976	15,891
Nipples and pacifiers *gr.*	3,070	4,763
Instruments *doz.*	1,458	4,075
Heels and soles *lbs.*	2,860	964
Bands *lbs.*	940	956
Other		118
Gutta percha manufactures *lbs.*	1,812	2,444
Synthetic rubber products		1,017
Other soft rubber goods		164,504
TOTALS		$738,641
GRAND TOTALS, ALL RUBBER EXPORTS		$30,701,441

Exports of Domestic Merchandise

	May, 1953	
	Quantity	Value
UNMANUFACTURED, LBS.		
Chicle and chewing gum bases	445,181	$191,297
Balata, gutta percha, etc.	1,750	4,530
Synthetic rubbers		
GR-S type	2,091,582	529,579
Butyl	7,444	1,639
Neoprene	2,525,418	1,064,756
Nitrile type	450,355	222,119
Other	73,917	43,529
Reclaimed rubber	2,159,402	193,738
Scrap rubber	2,787,927	67,727
TOTALS	10,542,976	$2,318,914
MANUFACTURED		
Rubber cement *gals.*	77,106	$154,514
And rubberized fabric *sq. yds.*	270,512	233,850
Clothing		214,716
Footwear		
Boots and shoes *prs.*	9,943	32,427
Rubber-soled canvas shoes *prs.*	37,203	69,384
Heels *doz. prs.*	85,280	100,740
Soles, soling, top-lift sheets *lbs.*	1,079,572	293,962
Gloves and mittens *doz. prs.*	22,657	84,508
Drug sundries		256,903
Toys, balls, novelties		58,118
Hard rubber goods		
Battery boxes *no.*	27,104	47,405
Other electrical goods *lbs.*	133,136	75,135
Other		41,296
Rubber tires and casings		
Truck and bus *no.*	78,846	3,707,038
Auto and motorcycle *no.*	55,883	708,091
Aircraft *no.*	4,935	393,408
Off-the-road *no.*	12,375	1,411,364
Farm tractor *no.*	4,497	251,492
Implement *no.*	2,395	37,915
Other *no.*	10,166	44,188

	May, 1953	
	Quantity	Value
RUBBER		
Inner tubes		
Auto *no.*	28,180	$59,931
Truck and bus *no.*	52,146	243,102
Aircraft *no.*	4,962	47,306
Other *no.*	7,633	37,525
Solid tires		
Truck and commercial *no.*	1,568	24,196
Tire repair material		
Camelback *lbs.*	422,327	126,375
Other *lbs.*	330,660	263,878
Tape, except medical and friction *lbs.*	55,531	51,997
Belting		
V-type, auto, fan *lbs.*	100,219	141,150
Transmission		
V-type *lbs.*	94,047	206,849
Flat belts *lbs.*	54,121	80,869
Conveyor and elevator *lbs.*	88,969	107,776
Other *lbs.*	15,686	14,801
Hose		
Molded and braided *lbs.*	296,540	235,221
Wrapped and hand built *lbs.*	125,598	120,575
Other hose and tubing *lbs.*	90,439	102,988
Packing		
Sheet type *lbs.*	35,515	22,062
Other *lbs.*	158,250	230,867
Tiling and flooring *lbs.*	324,791	81,728
Mats and matting *lbs.*	433,771	128,910
Thread: bare *lbs.*	26,503	48,148
Textile covered *lbs.*	21,382	68,813
Compounded rubber for further manufacture *lbs.*	951,981	313,659
Other rubber manufactures		712,961
TOTALS		$11,688,141
GRAND TOTALS, ALL RUBBER EXPORTS		$14,007,055

Reexports of Foreign Merchandise

	May, 1953	
	Quantity	Value
UNMANUFACTURED, LBS.		
Chicle and chewing gum bases	4,000	$1,160
Crude rubber	1,167,408	334,048
Balata, gutta percha, etc.	1,745	885
Synthetic rubber: GR-S type	19,760	9,171
TOTALS	1,192,913	$345,264
MANUFACTURED		
Rubber drug sundries		$080
Toys, balls, novelties		1,744
V-belts *lbs.*	45,229	29,189
Tiling and flooring *lbs.*	911	459
Other natural and synthetic rubber manufactures		270
TOTALS		$32,341
GRAND TOTALS, ALL RUBBER REEXPORTS		$377,605

SOURCE: Bureau of the Census, United States Department of Commerce, Washington, D. C.

Trade Lists Avaliable

The Commercial Intelligence Division recently published the following trade lists, of which mimeographed copies may be obtained by firms domiciled in the United States from this Division and from Department of Commerce Field Offices. The price is $1 a list for each country.

Automotive Vehicle & Equipment Importers & Dealers: Canada; Denmark; Ecuador; El Salvador; Italy; Spain.

Boot & Shoe Manufacturers: Brazil, Syria.

Chemical Importers & Dealers: Brazil; New Zealand.

Chemical, Synthetic Organic, Manufacturers: Switzerland.

Electrical Supply & Equipment Importers & Dealers: Spain.

Office Supply & Equipment Importers & Dealers: Australia; Netherlands; New Zealand; Venezuela.

Paint & Varnish Importers & Dealers: Iraq.

Plastic Material Manufacturers, Molders, Laminators & Fabricators: Mexico; Switzerland.

Radio & Television Equipment Importers & Dealers: Venezuela.

Radio & Television Equipment Manufacturers: Italy.

Sporting Goods, Toy & Game Importers: Venezuela.

Estimated Pneumatic Casings, Tubes, Camelback — Shipments, Production, Inventory — July, June, 1953; First Seven Months, 1953, 1952

	Original Equipment	Replacement	Export	Total	Production	Inventory
Passenger Casings						
July, 1953	3,180,726	4,952,844	98,815	8,232,385	7,111,880	11,735,733
Change from previous month	—	—	—	+1.50%	−2.72%	−8.69%
June, 1953	3,216,245	4,819,043	75,500	8,110,788	7,310,814	12,852,485
1st 7 mos., 1953	20,874,958	29,722,185	396,509	50,993,652	51,500,856	11,735,733
1952	13,174,553	27,476,093	381,552	41,032,198	42,516,581	8,544,855
Truck and Bus Casings						
July, 1953	434,806	849,349	47,644	1,322,799	1,061,243	3,146,823
Change from previous month	—	—	—	+13.23%	−15.86%	−7.62%
June, 1953	320,362	781,557	66,304	1,168,223	1,261,296	3,406,258
1st 7 mos., 1953	3,111,183	5,563,242	401,856	9,076,281	9,374,007	3,146,823
1952	3,068,717	4,768,651	528,549	8,365,917	9,663,259	3,102,192
Total Automotive Casings						
July, 1953	3,615,532	5,793,193	146,459	9,555,184	8,173,123	14,882,556
Change from previous month	—	—	—	+2.98%	−4.66%	−8.47%
June, 1953	3,536,607	5,600,600	141,804	9,279,011	8,572,110	16,258,743
1st 7 mos., 1953	23,986,141	35,285,427	798,365	60,069,933	60,874,863	14,882,556
1952	16,243,270	32,244,744	910,101	49,398,115	52,179,849	11,647,047
Tractor—Implement Casings						
July, 1953	161,956	137,287	5,484	304,727	277,336	741,639
Change from previous month	—	—	—	−14.58%	−17.85%	−3.62%
June, 1953	219,542	131,903	5,300	356,745	337,611	769,452
1st 7 mos., 1953	1,793,841	940,398	37,170	2,771,409	2,631,608	741,639
1952	1,901,126	844,244	64,165	2,809,535	2,863,112	740,182
Passenger, Motorcycle, Truck, and Bus Inner Tubes						
July, 1953	3,614,209	3,609,333	73,254	7,287,796	6,394,681	12,097,192
Change from previous month	—	—	—	+5.51%	−9.10%	−5.57%
June, 1953	3,538,603	3,297,503	70,868	6,906,974	7,034,896	12,811,053
1st 7 mos., 1953	23,993,556	23,687,817	426,559	48,107,932	48,157,315	12,097,192
1952	16,208,537	19,847,983	659,707	36,716,227	37,850,142	11,223,276
Camelback (Lbs.)						
July, 1953	—	23,505,421	342,978	23,848,399	21,182,755	32,675,395
Change from previous month	—	—	—	+8.72%	−4.62%	−3.77%
June, 1953	—	21,427,840	508,480	21,936,320	22,209,600	33,953,920
1st 7 mos., 1953	—	146,158,861	4,437,698	150,596,559	158,443,395	32,675,395
1952	—	131,205,760	3,066,560	134,272,320	133,477,120	19,882,240

NOTE: Cumulative data on this report include adjustments made in prior months.
SOURCE: The Rubber Manufacturers Association, Inc., New York, N. Y.

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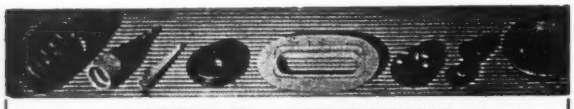

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